EFFICIENCY COMMITTEE WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
2008 Order Instituting Informational	)	Docket No.
Proceeding and Rulemaking on	)	08-DR-01
Load Management Standards	)	
	)	
Customer Education and Needs	)	
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CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

THURSDAY, JULY 10, 2008

10:07 A.M.

Reported by:
Peter Petty
Contract No. 150-07-001

COMMISSIONERS PRESENT

Jackalyne Pfannenstiel, Presiding Member

Arthur Rosenfeld, Associate Member

ADVISORS PRESENT

Timothy Tutt

David Hungerford

STAFF PRESENT

Gabriel Taylor

Martha Brook

ALSO PRESENT

Loren Lutzenhiser
Portland State University

Girish Ghatikar (via teleconference)
Demand Response Research Center

Mithra Moezzi
research / into / action, Inc.

Karen Herter
Joshua Rasin
Heschong Mahone Group

Jodi Stablein
Susan McNicoll
Pacific Gas and Electric Company

Mark Gaines
San Diego Gas and Electric Company

Seth Kiner
Larry Oliva
Southern California Edison Company

ALSO PRESENT

Vikki Wood
Amy Furlong
Sacramento Municipal Utility District

Angela Chuang
Electric Power Research Institute

I N D E X

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P R O C E E D I N G S

10:07 a.m.

PRESIDING MEMBER PFANNENSTIEL: I think we're ready to begin. This is the Energy Commission's Efficiency Committee workshop on load management standards.

I'm Jackie Pfannenstiel; I'm the Chair of the Energy Commission and Presiding Commissioner on the Efficiency Committee. And to my left is Commissioner Rosenfeld, who is my Associate Commissioner on the Efficiency Committee.

To his left is David Hungerford; he's recently appointed Advisor. And to my right is my Advisor, Tim Tutt.

This is the last -- well, the last scheduled in a series of workshops on implementing load management standards in California. And today we're going to take on, I think, perhaps the most difficult of the many difficult issues we've been dealing with on customer needs, customers' side of the equation on load management.

We have a very full day, so if nothing further I'll turn it over to Mr. Taylor. Gabe.

ASSOCIATE MEMBER ROSENFELD: Well, I

want one word, Jackie.

PRESIDING MEMBER PFANNENSTIEL: Your mike is not on.

ASSOCIATE MEMBER ROSENFELD: I do want to take this opportunity to welcome David Hungerford. You've seen him in all the previous workshops doing honest work as an organizer. John Wilson has left to go to the Energy Foundation. I'm sure that David can fill John Wilson's shoes, which is a big order. And, welcome. So, thank you.

PRESIDING MEMBER PFANNENSTIEL: With that, we'll turn to Mr. Taylor.

MR. TAYLOR: Good morning. Thank you, everybody, for joining us. A few quick housekeeping points. Let's see, the two exits to this room, if you haven't been here before, the restrooms are just to the left out here. There's a snack bar on the second floor.

And in the unlikely event that we have a fire alarm, please follow the employees out the exits here, katty-corner across the street to the park. That's it for housekeeping.

We do have a full day, so I'd like to welcome Dr. Loren Lutzenhiser up here from

Portland State University to discuss customer education and needs today.

(Pause.)

DR. LUTZENHISER: Well, thanks for this opportunity to visit with you. I know a lot of folks here. I've done a fair amount of work with the Commission looking at behavioral issues. And so when I spoke to David about this several weeks ago, we tried to look at ways that we might be able to draw on data that we've collected over the last six or eight years related to consumer response, to a variety of circumstances that might have some bearing on this whole issue of customer needs and education.

These are the primary workshop topics, as identified in the workshop announcement. And I don't have much to say about these things except that these, I think, are important topics in terms of customer impacts, what customers need to be able to effectively respond to time-of-use and critical peak rates. What kind of education might be required. I'm not going to come up with a prescription, but I will talk a little bit about some issues around education. And possible load management standards.

And I think some things I have to say you can apply to your own thinking about load management standards. But I don't have specific recommendations here.

I will say that what we're after here basically is, well, I guess before I show some things that I think I'm going to call idealized load shapes, because I think that's sort of a context against which we have to play off real load shapes.

And the really nice slide in this presentation, and I'll get to it as quickly as I can, is the last slide, I think. Because it presents sort of the reality and conundrum for us.

Again, these are important questions. What I think is really fundamentally different about efforts to effect time-of-use and demand and load shapes is that you really do need to engage the energy user in more than just a one-of choice to buy a piece of efficient equipment or something of that sort.

The user has to be engaged in participate, both in terms of permanent changes, a time-of-use rate essentially is telling people to change their energy use habits. To reflect on

those in some fashion, and actually alter what it is that they're doing at particular times of the day.

And critical peak means -- and hopefully with habit change you can sort of ingrain that, and you don't have to spend a lot of time thinking about it. But with critical peak you either require constant attention, and constant attention to information, information flow and/or automated control.

Even in the cases of automated control, behavior interacts with that in such a way if you're not around is the automated control actually providing the kind of benefits that you want and so on. So there's sort of a constant attention.

So, really some new services in communications and tools and strategies will be required if we adopt this a widespread large scale, and we shall. So I wanted to talk about some of those issues and problems.

It will not be easy. There's no sort of one-size-fit-all solution here, I don't believe. We can certainly discuss that. Also I don't believe, based on what we've seen in the past, the

response that we get from people is necessarily the one that we expect.

But I do believe that these uncertainties can be reduced through research. Research, I guess I would pitch that. I'll talk a little bit about research. But mostly I want to draw on what it is that we know from what we've done in the past.

So, today I'm going to talk about idealized loads. Sort of how we think about what we're trying to change. What the impacts may be, and have been in other cases. And what the information environment is actually like. And what the situation is that we're sort of wading into, we try to provide education and information, which are some of the load management standard proposals.

And then I'm going to end up by talking about what some real loads and real system modeling would actually require.

Here's a load profile. When I sort of think of this in my imagination, most of us, I think, think of something like this. This could be a system load; it's obviously peaking, say 24 hours in the afternoon, a little peak in the

morning. Individual loads probably look a lot like this. And, in fact, the number of time-of-use experiments have used the system, say residential sector system load shape as a proxy for individual load shapes in constructing rates and anticipating rate impacts.

Okay, just elaborate this a little bit. We expect it to be repeating. Repeats day by day by day. Of course, we expect it to be affected by things like temperature, to have weekend cycles and annual cycles and so on. But idealized, you know, we're still dealing with something that looks probably a lot like that.

We don't assume everybody has exactly the same load shape. We probably reasonably assume that they're relatively similar to one another. People go to work, people come home, people have similar kinds of houses and systems and habits and so on and so forth.

So what we're trying to do with policy then, by altering price, is to either shift that consumption in time off of the system peak and/or reduce consumption overall. So conservation actions can also have a peak effect that's important.

So here's sort of the policy mechanisms. You know, how could this policy work and how could the response actually work. Well, in one sense, you're really trying to change a perspective. I think, in talking to David about this earlier, sort of like this the $4-a-gallon -- when you hit $4 a gallon, does that suddenly get everybody's attention. And so on and so forth.

So, in some ways, saying there is a system peak problem; and it's a big enough problem that as a matter of policy we're going to change the price at particular times of the day, is an attention-getting strategy that allows people to make choices, informed choices that they never were able to make before.

Some of the changes that they can make are changes -- and these, again, I believe are all behavior changes, involve shifting loads to offpeak times. Doing your laundry or your dishwashing and so on later at night. To do onpeak conservation; to be more vigilant during the peak periods, you know, whether it's little activities or whether it's big ones like changing the thermostat settings and so on.

And to inform choices that are being

made long term, as the housing stock changes and people do remodeling, renovation and so on and so forth, so that you can install permanent efficiency that will have an effect onpeak as well as offpeak kind of circumstances.

I believe that the impacts are actually going to be highly variable. These ideal load shapes don't exist. And I'll show you some real load shapes as we go along here.

How you can change depends very much on what your existing patterns of usage are. Getting people's attention and awareness is going to be really key. It's not just an incidental part of this story.

And engaging people, I think, is going to be really important. Once you have them engaged, and they're about to make a choice, or are given some range of choices, how they understand those choices, what resources they have to apply to them, and what the constraints are, are crucially important.

And I won't go into this in the kind of detail, but I'm simply suggesting that once you set somebody down a path doesn't mean that they're going to execute in the way that you would hope

them to. And the impacts, again, responses might not be what you expect.

Okay, here's the first sample of real load shapes. So I want to draw on, in the course of this talk, on several datasets that have to do with actual consumer end-use patterns. This is one day, July 1, 2001. This is from the statewide pricing pilot control group, so they're not affected by a rate of one sort or another.

It's a coastal climate; they all are exposed to essentially the same temperature conditions. But two of these patterns are actually somewhat cooler. And they just, incidentally, happen to be the ones with the highest peaks.

So, this is a little better understanding of what you're going to get from consumers in terms of variability. And you start to get a sense that what they can do very much depends on what those load patterns look like. And you also get a pretty clear sense there's a lot of variability. And you get a pretty clear sense that they don't look a lot like the idealized load shape.

ASSOCIATE MEMBER ROSENFELD: Loren.

DR. LUTZENHISER: Yes.

ASSOCIATE MEMBER ROSENFELD: What was the interval on that? Was it half an hour --

DR. LUTZENHISER: Those are 15 minutes.

ASSOCIATE MEMBER ROSENFELD: So you get the impression that 15 minutes is a little too short for this discussion, don't you?

DR. LUTZENHISER: It's possible. But, yeah, the hundred datapoints gives you an awful lot of information, sometimes, you know, way too much information, I think. But you did get the sense that these systems are bouncing around a lot, and they're essentially off on air conditioning cycling, of course, I think, in many cases.

Okay, so what kind of effects could we expect from a rate. Well, these are kind of logical effects, but they're also ones that we've observed in time-of-use experiments.

It's quite possible that with the rate change I can get a positive benefit if my load shape is -- if the bulk of my consumption is offpeak. The change in the rate can put money in my pocket. I do nothing.

It's also quite possible I've got a

pretty good match so I don't have to do very much, and it's going to be relatively neutral. It could have a measurable cost impact but I may not notice it.

In some of the survey work we've done we find that, you know, as many as 20 percent of the people we talk to never see a power bill, either because somebody else in the household is paying it, or because it's being taken out automatically. Or because there's a levelized payment plan in place. So you're not really seeing cost impact.

You may see a cost impact but you have enough resources that it doesn't matter. So you basically say I'm not going to change anything.

Well, the next three categories here are the ones that I guess we're most concerned about. And the first two were the ones that we want to try to induce. Which is shifting of energy use off the peak, and conservation or efficiency investments that would reduce consumption across the peak, as well as across the nonpeak.

Although it's quite possible that those conservation actions might not have a beneficial effect if they were undertaken at the wrong time.

And it's also possible that they may

completely fail for a variety of reasons. So you could take a sincere conservation strategy in your household, but failing to understand what you were doing, or failing to keep up with the schedule because of events or whatever, means that you could be a sincere conserver, but not a saver in that sense. In fact, you'd face a higher bill.

In some cases there could be a significant impact regardless of what you do or don't do, or you don't know what to do when there's a budget crunch, and you simply reduce other expenditures.

And at the very extreme, of course, is the case where you just don't have the resources. There's a payment crisis, you don't pay your bills, you know. You end up in arrearage and problems with the utility and social welfare declines. And, in fact, this is sort of the one shot after the rate is implied, through time, as possible, people move from one category to the next. And we would hope, of course, that they would move more into that shifting and conserving category.

But, again, they're not all necessarily there to start with, and how you get them in that

category is problematic, I think.

Here's some data from a couple years ago, from a study that we did on natural gas, when the price spiked about 30 percent, I think. Ultimately it was predicted before it might spike as much as 40 or 50 percent in November, December, January.

And so we surveyed folks at that time to find out what the impact was. Well, here we can see it was sort of similar to what we're seeing in the previous slide. A quarter of the people said it wasn't a problem; a lot of those people didn't even notice.

Half said it could be managed with some adjustments that weren't particularly painful. And then you get down to the people who said it was a real problem and so on. It's a minority at that point, even at the 30 percent rate.

But if you look at the distribution of impacts where people said it was a severe hardship or a real problem, that was about a quarter overall. Those top two bars.

But in specific subgroups, in the low income category, African-American, Latino community, it's a much higher impact. And also

when you ask people about, in a separate set of questions, cutting back spending, renters disproportionately compared to owners. So that that's exactly what they were doing.

So, we asked people, well., what did you do. What were the conservation actions that you were able to take. And not surprisingly, since that's, you know, primary use of natural gas in the winter is heat, people adjusted their heating levels.

More surprisingly was something like 13 percent and 10 percent; these are not mutually exclusive. You can report more than one thing. So, somewhere in the, you know, 15, 20 percent range people shifted fuels, whether that was a good or rational thing or not. And some stopped using heat 10 percent, so they stopped using heat all together, which, you know, is more optional in some cases than others. But this is PG&E northern California results, so there's not a lot of places in northern California, I think, where it would be comfortable if you quit using heat all together in the winter.

Less water. And so here's some other kind of surprising things. Less water, yeah, if

it's water heating and laundry, you can kind of see that, you know, as a benefit.

But using less electricity, well, it reduces the overall bill, wasn't a gas conservation response. Energy in doors and windows only heat an so on and so on.

So, to some degree we're getting a response we might expect. And others, we're getting things that we wouldn't expect at all.

Okay, I think I'm probably taking a little more time than I should here with this, but -- so there are some insights from the California crisis in 2000/2001 where policy instruments available were not very robust. We could offer hardware incentives and a lot were. But voluntary conservation requests were made, particularly through the Flex-Your-Power campaign.

What was surprising was that there actually was a fairly widespread response. Most of the motives that were reported were altruistic. The system peak really was reduced by that 5000 megawatts. In fact, it was more like 6000 megawatts by CEC estimate. So it was an important end fact.

But shifting peak loads tended not to be

very frequently explicitly requested. So we got this peak load effect. And a surprising proportion of people really didn't do much of anything. They said we did nothing, or we did, you know, shut off a few lights or something of that sort.

This graphic could be a little more clear from where you're sitting, but what's important here, I think, is that behavior changes were most of what people could do. And the ones that surprised us was that the heating and cooling behaviors, which probably actually yielded the results that were most important for the system, tended again not to be the ones that were requested in the Flex-Your-Power campaign.

So, in fact, people were saying that they had actually quit using air conditioning under fairly hot circumstances was not an unusual response, and probably had the most effect.

The good news is that many people said that whatever they did to conserve had no really serious effects on their quality of life or comfort. And they were quite pessimistic about the future energy problems which could be taken to be a good thing, because they're sensitive to

issues in the system, presumably including peak system demands and peak costs.

There's a sense, broad consensus, that lifestyle change would be necessary in the future. And that business and government really should take a lead on this. So I think there's support for, you know, action to improve energy efficiency and demand response and load management.

I'm not going to say much about this except this is a model that we developed as a result of the crisis and the series of interviews that we did with larger energy consumers. And simply to say probably weren't modest expectations when we think about what we can actually achieve, because it's not simply people's interest or concern in the problems, their capacity to act, the resources, as well as the conditions that they're facing at the time.

And so, you know, what we're actually looking at, at a first cut at least, in many of these cases may be to, you know, do something with 10 or 15 or 20 or 30 percent of the population. Not 100 percent.

Okay, a little bit on the information environment, what do people know. Not very much.

Energy bills are infrequent, mostly we know these kinds of things. A lot of the information coming from media and so on. The tips are pretty simplistic.

We like to keep our energy flows invisible and non problematic so people don't have a lot of information about how behavior links to consumption, time of day or not.

There's little feedback that's immediate. If you make a change you don't notice it until the next bill and a lot of other things may have changed in the interim. So actually, changing habits and so on are crucial. That's what we're actually after here, are changing things that people are doing unconsciously.

PRESIDING MEMBER PFANNENSTIEL: Excuse me, Loren.

DR. LUTZENHISER: Yeah.

PRESIDING MEMBER PFANNENSTIEL: Just when you, back on the bullet where you say energy flows purposely invisible. I don't -- what do you mean by that?

DR. LUTZENHISER: Well, I mean that, you know, we actually do keep the pipes and so on in the walls where we can't -- so the system, itself,

we see the end use, we see the light, we see the fridge and so on. But we don't necessarily think much about what's powering the fridge.

PRESIDING MEMBER PFANNENSTIEL: Well, that's us, as consumers, but --

DR. LUTZENHISER: That's consumers. When I say purposely --

PRESIDING MEMBER PFANNENSTIEL: -- when you say purposely, do you --

DR. LUTZENHISER: -- in the sense that I think it's been long a value for utility companies and manufacturers and so on to keep that part of the system troublefree and transparent.

And, in fact, even in our efficiency theory, you know, Amory Lovins has pioneered the notion that you can do exactly what you're doing, don't worry about a thing, we'll just take care of it. You know, on the hardware side.

So, don't worry --

PRESIDING MEMBER PFANNENSTIEL: But with smart meters and presumably inhome displays, won't that fundamentally change that concept?

DR. LUTZENHISER: It certainly can. And I think that that's really important. I don't know that it necessarily will, but it certainly

can. And it can't probably happen without that, you know, near real-time feedback.

PRESIDING MEMBER PFANNENSTIEL: Okay, thanks.

DR. LUTZENHISER: But it seems easy enough to sort of educate the population, I guess, providing information. And I'm simply going to say that there's a lot of research and work in social psychology and marketing and other areas that suggest that just telling somebody something doesn't necessarily mean that they're going to get it.

And so I think it's important that this has been framed by the Committee as an education issue. That it's more than simply information delivery. But that's what we do with education, as an educator. A lot of it is to try to deliver information. And we've learned that, you know, what's being said and how it's said and who's saying it where and when, and what else is being said about what you can do in your house, you know. Marble countertops are really cool, you know, and so on and so forth.

Makes a -- has an effect on how the information that you're providing is being

received. And who is saying it, under what circumstances, is crucially important. We've discovered that the messenger is very important.

I believe that there are lots of ways to get it wrong, and to actually get this right is going to take a lot of trial and error, creativity on the part of utilities and others who are doing this communicating. And I think very serious evaluation to try to understand what's working and what isn't.

With that said, here's the Professor's depressing slide, which is I'm in the education business. We do a lot of educating in this country. It's universally required. And we also have a specific culture that spends a lot of time generating news and current affairs discussions and so on.

And higher ed, where I work, has blossomed over the last three or four decades. But we still have pretty high dropout rates. I'm still giving a lot of C's and B's. And in my class a B means you didn't get something. And a C means you probably didn't get a lot.

And so just the grasp of the subject matter, regardless of how diligently, we can lock

people up in a room and I can talk to them for two hours at a crack, once a week, you know, for ten weeks. And at the end of the day they'll get some, and -- the whole idea of creating energy literacy, which might be a plausible goal, is something that we, you know, have to think hard about how we might best accomplish, again, trial and error, again, evaluation, I think.

And this I thought was urban legend, but 20 percent of Americans really do believe that the sun revolves around the earth. At least they did in 1999. That's a real Gallup poll result. I was convinced this had to be fictional, because I'd seen it around. It's not.

And that's not an implausible interpretation of how the world works, you know, if nobody's ever bothered to tell you otherwise. And, in fact, the other interpretation seems a little weird when you think about it. This is the native interpretation, but that also says that we have to understand where people are coming from in order to try to communicate with them. And you don't communicate with everybody in exactly the same way.

So, best guess, few people see energy

bills, you know. In a complex household situation everybody isn't handling all the bills and seeing that. But everybody's doing the behaving, and making a difference. They don't see energy information and they probably don't, pretty superficial.

So, baseline we have a pretty superficial understanding of energy issues related to, you know, how we live.

So, okay, sum up, I guess, you know, we have, I think, a limited basis to proceed tomorrow with effective information education. There really is a wide diversity of loads and behaviors and you will see this in a minute. The household demand system's extremely complex, and I think that some research is crucially needed in order to proceed on a sound footing.

Sort of a background here as our original set of loads and so on. And I'm simply saying that, without repeating myself too much, that a lot of the energy efficiency information that we provide is pretty generic, you know. Turning off the light will save some energy.

We have relatively little experience in segmenting households and consumer subgroups. We

haven't had to do that for a long time, and we haven't.

Some of the utilities are making some progress now and doing some interesting things. And it could be that they know an awful lot more about some of these things than I'm aware of, that appear in the literature and so on and so forth. So I'm not pessimistic about that. But I think we have work to do there.

We haven't had a lot of experience in policy, in behavior change. Actually, looking at the specific consumption profile of an individual house, and trying to understand what the system -- how the systems are performing and how the behaviors are interacting with them, is like is in home performance testing, is costly and challenging to really come up with a very detailed understanding. Let alone across classes of buildings and households.

And we don't have good real-time feedback, and there's been a real decline in some rater studies for a particular end use, as we're dealing with very old data. I think load forecasting people can tell you about that.

Although, as Commissioner Pfannenstiel

points out, there's a mass of new data on the way that I think will make this much much easier.

Okay, here's one of my slides. Okay, what's this. This is a CEC-funded time-of-use experiment in SMUD territory in 2003. Vikki Wood was involved in this thing and we did some surveying of these people, to try to understand what they're doing.

They were specifically selected because they were high energy users and they had load profiles that would be easy to shift and benefit from this rate.

This is a hot day; this is around 100 degrees on a Sunday in July. And we could -- well, we could look at this picture for a long time, I think, and really fully appreciate the variability, the effects of behavior, the fact it's subjected to precisely the same environmental conditions.

We've got some people who obviously aren't home. But some other people who were obviously pretty low users. And some others that are extremely high, almost, you know, stunningly high users in this population.

But even we'll move into October, and

this is a Friday and it's cooler, doesn't get over 78 or 76 or something on this day. And there still is a lot of variability that would be crucial to sort out if we were to actually advise specific households about their load, their load shapes, the sources of consumption and the nature of the changes that they can make.

So, it's obvious when you shut off those air conditioners there, but that's not the message that I think anybody wants to deliver.

So, to sum this thing up, the household system is a complex one that's involved with the dwelling, the equipment, the household dynamics, the household composition and the household behavior patterns. And it's not simply in the household, but it's also influenced by the neighbors, the markets, the shadowy figures over here that are, you know, the institutions of one sort of another that are involved, the utilities, supply chain actors, governments and so on and so forth.

And we -- don't have simple models. This is a pretty good model that Sylvia Bender and I, or I developed with some research that Sylvia's group funded this last year.

Basically we were looking at a sample of northern California households annual electricity consumption straight on ordinary least squares regression of the factors that should have -- make the most difference.

And, in fact, we discovered that, no surprise, environment, weather effects are important. The building characteristics, the technologies and systems that are in use, the behaviors, particularly associated with household compositions, household size, household age and also some other social characteristics.

And without looking at particularly numbers, which actually may be too small to read, anyhow, what's important here is to note that some of these effects are very large. And these are all controlling for the effects of others.

So, we look at this and go, okay, a single family dwelling, well, that must be house size. No, no. House size is in here separately, okay. House size has a big effect, but simply being a single family dwelling has a big effect.

Income, ownership. For some reason, some cultural ethnic differences controlling for all other things. And here we can see the, you

know, the commonly held understanding of having a teenager around is costly. It's costly in energy terms, as well, you know. We can see that having one teenager here, on average, across this whole sample is sort of like equivalent to, you know, -- getting rid of that teenager would be equivalent to moving into a new row house or something of that sort --

(Laughter.)

DR. LUTZENHISER: -- both of those you can get --

ASSOCIATE MEMBER ROSENFELD: Where is the teenager line, Loren? I can't --

DR. LUTZENHISER: What was that, Art?

ASSOCIATE MEMBER ROSENFELD: Do you have -- oh, 13 to 17 years.

PRESIDING MEMBER PFANNENSTIEL: Yes.

ASSOCIATE MEMBER ROSENFELD: Okay, all right.

DR. LUTZENHISER: Yes, yeah.

ASSOCIATE MEMBER ROSENFELD: I was looking for teenagers.

DR. LUTZENHISER: Yeah. So you can save a lot if you can get that teenager out and move into a row house.

So, okay, and this is my second-to-the-last here. So to provide detailed feedback and advice, if that's a goal, and it needn't be. I think it's quite possible to, you know, enact a rate and see what people do. And there will be some savings, I will guarantee that.

But if part of the goal is to provide high quality information that's relevant to people's circumstances, that may help them to make changes in behavior that result in predictable and beneficial outcomes, we really would like to sort through that mess of loads and load shapes and patterns, and sort of see if we can find out if there are some discernible common patterns in there. I'm sure there are patterns and types in load profile types so that we can simplify that picture to better understand.

To get below that point at what's actually producing those differences, which we can do with survey data which we have, and which can be collected, without that much difficulty, to really understand what the nature of the structure is that's creating those loads and those peaks.

To look at this whole system as it changes through time, and part of this has to do

with looking at some of these time-of-use experiments that have been conducted in the past, and are being conducted now. SMUD's in the middle of a two-year experiment right now that is being studied as it goes on to sort of understand where the changes were made and what effect that actually had on load sizes and load shapes, and so on.

And the benefits from this can be more precise targets for a variety of programs, so that we -- I think more realistic assessment of what we can possibly get from different subsegments and different targeting, different program delivery approaches.

And also, at some point, to allow us to compare policy strategies with more confidence, so we have an idea if it's worth sinking extra amount of time and effort and energy and resources into strategy A as opposed to strategy B. Particularly when you're facing, you know, very very challenging carbon reductio goals.

So here's the last slide. And this is all I'm going to basically do is leave us with this. And I think that's the problem, is to figure out how, you know, what we can take away

from that.

PRESIDING MEMBER PFANNENSTIEL: One sort of general question. As we're thinking about the research needs and, in fact, the data that's going to be available, at least to the utilities and presumably the utilities and to the customers and hopefully the utilities' customers and researchers, --

DR. LUTZENHISER: Right.

PRESIDING MEMBER PFANNENSTIEL: -- in the future, the next couple years. Are you making plans on what you would do with that? What do you most want to examine? How do you want to pull that apart?

DR. LUTZENHISER: Right. Well, yeah, I think the first step would be to try to simplify, as Art points out, these -- you know, we have too many datapoints. We're going from an analytic situation where in that model that I showed a minute ago we had 12 observations over the course of a year. And then we go to 100 observations a day, right. So we got 36,000 observations then.

So the first challenge is to figure out how to simplify that so that we have -- we smooth, but we smooth in such a way that we really don't

just sort of wipe out all of the variation.

Then to try to understand if there are some, and there will be, some distinctive forms and patterns. And then, through surveys, and maybe even some detailed interviews in some cases in terms of real anomalous cases, try to understand what the underlying behaviors are.

And so on. So I think it's a -- yeah, I mean I -- in a general sense I sort of scoped that out. And we've collected a fair amount of little bits of data. The statewide pricing -- but a lot of this hasn't been analyzed in anywhere near the detail it could be, I think.

And as you suggest, there's going to be lots of new data coming online. So, --

PRESIDING MEMBER PFANNENSTIEL: Well, I guess I'm also thinking in terms of how to get the message out there, that there's one level that is sort of just educational, and how do you get people to look at stuff and read it and understand it.

But another whole category or people who are trained as an economist, would say get some basic price information and usage information. And that's both electricity prices. And I would

guess that there probably isn't one person in a hundred, probably not anybody in this room, who could actually tell you what their marginal electricity price is this month or last month.

DR. LUTZENHISER: Right.

PRESIDING MEMBER PFANNENSTIEL: In fact, maybe not one in a thousand.

DR. LUTZENHISER: Right.

PRESIDING MEMBER PFANNENSTIEL: But, I mean, I really think that that's part of it. But it's also the information about energy-using products. I don't think most people have much idea of what light bulb A compared to light bulb B, or refrigerator A compared to refrigerator B, actually uses in their house.

DR. LUTZENHISER: Um-hum.

PRESIDING MEMBER PFANNENSTIEL: So, I mean, to me it's sort of understandable that people have no idea of what to do when they're asked to do something. Because it's not been -- I believe people act in their self interests. If they have some information, I think they don't have that information.

DR. LUTZENHISER: Right, right.

PRESIDING MEMBER PFANNENSTIEL: But

think beyond sort of the household research, there needs to be just massively more information in the marketplace.

DR. LUTZENHISER: No, absolutely. I couldn't agree more. And I think some of that can be supported by research, but some of it, because the way that advertising tends to work, you get creative people and they throw out ideas. And you sort of see what works. And 80 percent of them don't make it to the market. And then when you get in the market, you know, 10 percent of those might actually hit. And then you have some debates about what actually did communicate and so on and so forth.

But I think good creative stuff comes across; the stuff that I saw during the crisis on the Flex-Your-Power was, I think, very very powerful and was well received by people who saw it at the time, you know. In terms of, well, it's making me think about energy. And it's kind of funny; and it's something that I really thought about before.

Was it comprehensive? No. It was sort of scattershot, no question about that.

And so, no, I think that's absolutely

right. I do think we have to be sensitive to the way people understand it, though, and process it. It's really not the same.

PRESIDING MEMBER PFANNENSTIEL: Well, plus you mentioned that during the crisis people acted for altruistic, civic --

DR. LUTZENHISER: Yeah.

PRESIDING MEMBER PFANNENSTIEL: -- motivations. And I'm looking at a more sustainable world in this country, at least, where people are acting out of crass personal benefit motivations.

And I actually think this can work for that purpose, also. If we --

DR. LUTZENHISER: Sure.

PRESIDING MEMBER PFANNENSTIEL: -- get in the right pricings and information.

DR. LUTZENHISER: That's right. And I think, you know, the right price signal -- if the price signal is more present, and we'll learn more about that. I mean, you'll hear some of this, I believe, from me throughout, and later probably from Vikki, a number of utilities are now experimenting with these near real-time feedback mechanisms, like the Blueline system and so on.

And so we'll have a little better understanding going forward, how people actually use those and how they use that information.

But, again, some of this is, you know, maybe it's waiting for like the best feedback device or something. We don't know what that looks like until we've seen it.

We thought we knew what a mobile phone was. And, in fact, everybody, the smart money was that Apple could go broke with their new mobile phone, because, yeah, they're going to reinvent the phone, right.

Well, apparently they did. But nobody --

ASSOCIATE MEMBER ROSENFELD: They did reinvent the phone, not go broke.

PRESIDING MEMBER PFANNENSTIEL: Right.

DR. LUTZENHISER: Yeah. But, anyway, we won't really know until we see it, I guess. But different kinds of interfaces and the supply information, supply control, I think are important.

There's a small, but a pretty impressive, literature on the use of programmable thermostats that shows people using them in very

surprising ways. And not sort of taking the information away from them that we would hope they would, that was intended.

ASSOCIATE MEMBER ROSENFELD: Loren, let me ask you a little question and a hard question. The little question is what is this Blueline experiment?

DR. LUTZENHISER: Well, the Blueline is a Canadian feedback monitor; you basically strap it on your exterior power meter cover. And it has a little optical sensor. And it's sensing the turning of the wheel in the meter. And it's sending a little signal to a small display that's sitting in your kitchen or on your desk or whatever, that shows you in near real-time what the kW, what the wattage draw is in your house at a particular time.

And then it also even translates some of it into rates in terms of what your cost is at a particular time. And they're moving to set it up better for time-sensitive rates.

It has a few small problems. It has -- in the version we had, the version that works on a digital meter will give you real consumption information. The version that works on an old

analog meter bottoms out at 300 watts. It can't give you a reading below 300 watts, which is very frustrating for some of us who have loads below 300 watts.

And there's also a bit of a time lag, maybe a 20-second time lag before it sort of makes an inference about the load and sends that back. So, it's not precise real time.

ASSOCIATE MEMBER ROSENFELD: Well, of course, we're going to have that problem multiplied by a million in California because within five years we're going to have 12 million smart meters and millions of communicating thermostats.

So, we'll have all the Blueline data --

DR. LUTZENHISER: Yeah.

ASSOCIATE MEMBER ROSENFELD: -- you want. You have to design it so that people can understand --

DR. LUTZENHISER: So people can actually understand it and make use of it.

ASSOCIATE MEMBER ROSENFELD: Let me ask you a much more difficult question, which I'm asking you, but you're the first speaker and so I'm really asking all the speakers during the day.

My dread, and perhaps Commissioner Pfannenstiel's, is that we will, in fact, have 10 million smart meters and 4 million communicating thermostats, and a hot day arrives, and in theory everybody's programming his or her thermostat so that when they're not home the thermostat sets up anyway.

This brings back shades of blinking VCR lights.

DR. LUTZENHISER: VCRs, yeah.

ASSOCIATE MEMBER ROSENFELD: What can we be doing in a much more focused educational campaign to fix it so that the hardware is easy enough, and the education is enough so that people can actually program their thermostats? Or is that hopeless, does it need somebody to help them from their friendly utility? Or have you thought about that problem at all, because that's --

DR. LUTZENHISER: I haven't thought about it --

ASSOCIATE MEMBER ROSENFELD: -- sort of an obsession for the day.

DR. LUTZENHISER: I haven't thought about it rigorously. Although when we put in a new furnace in my house and put in a new

programmable thermostat, the guy programming it for us sort of was going through the layers and so on, said, I'll take care of this for you. We'll get that. Now, there's this one layer here where this thing like learns what you really expect and why. I'm going to disable that because it doesn't work all that well, and you're just going to call me back when it starts behaving oddly on its own. So we don't want that.

So, that's part of, you know, it's the infrastructure system that has to support some of these things. Where do you want the phone calls to go to when people are confused.

And people will override, you know, they say, no, the big issue is, you know, can you educate people to, and probably what the consequences of sort of not thoughtful, careful management and override of this kind of thing.

I say, yeah, I suspect that you can. I don't know exactly how to do it, but I think this is -- you're fraught with difficulty. I'd stay up a little late at night thinking about this one, because the interface with the information is crucial. People have to be able to understand it.

And, you know, maybe it needs to be like

an iphone or something.

(Laughter.)

DR. LUTZENHISER: But there still are layers there. There still are layers that everybody doesn't sort through. And so maybe that's another thing, you know. Maybe we need to have, you know, a simple menu of options that you can always go back to and get some predictable results.

And then if you need to fiddle with that in some fashion, you can. But with some safeguards so that you can't mess up sort of the root of the thing. I hadn't thought about that much. It's going to be a real challenge, I think.

And I think the real -- there's probably a lot of product out there and there are going to be a lot of people with proposed interface solutions. And I think that's terrific. But, you know, the market's going to have to sort that out.

PRESIDING MEMBER PFANNENSTIEL: Other questions for Loren? Fabulous, thank you very much.

DR. LUTZENHISER: Okay, thank you very much. Um-hum.

PRESIDING MEMBER PFANNENSTIEL: Good

start for the day.

Gabe.

MR. TAYLOR: Next up we have Girish Ghatikar from the Demand Response Research Center, hopefully, on the telephone. Girish, are you there?

MR. GHATIKAR: Yeah, I'm here.

MR. TAYLOR: Excellent. Let me get your presentation up and I'll run that for you.

MR. GHATIKAR: Okay, thanks.

MR. TAYLOR: Can you see that?

MR. GHATIKAR: Not yet, no.

(Pause.)

MR. GHATIKAR: Okay.

MR. TAYLOR: Go ahead when you're ready.

MR. GHATIKAR: Okay, I'm ready. So do you want me to tell you when I move to the next slide?

MR. TAYLOR: Yeah, just say next slide. I'll take care of it.

MR. GHATIKAR: Okay, thanks.

Yeah, thanks for (inaudible) at this workshop. Today I'll be talking about, you know, our experiences from commercial and industrial customer education, and then what we learned from

the automated demand response here in California.

The presentation -- next slide, please. The presentation overview, first, I'll just go through briefly on some of the customer challenges specific to commercial and industrial customers. And then I'll just cover a little bit about our experiences -- to open automated demand response.

Then a little bit on the challenges that, you know, we face -- from last six years or so. The research challenges are very specific to demand response, but may be applicable to other energy (inaudible). I'll cover that in detail as we move forward.

And now going to some of the lessons we learned specific to standardizing DR communication infrastructure. And I'm trying to understand the energy information -- performance monitoring tool, and how they relate to each other.

Then finally I'll go over some of the customer needs for industrial and commercial customers.

Next slide, please. The commercial and industrial education challenges. I'd like to make a general statement as the customers basically lack knowledge on how to minimize energy use. The

DR control strategies and technical potential due to the lack of experience and expertise.

It's not that they don't want to, it's just the fact that they don't know how to. So that's something that should be covered using education. This is a real challenge.

So some of the other challenges that I can, you know, cover or go into detail in this presentation, and it's that the DR programs are complex. What makes it more complex is the tariffs, the incentive structures. These all do hamper the development of operational strategies and create a barrier to (inaudible) of, you know, the customers, which is the primary goal whenever somebody invests big dollars into the energy, the development of energy programs.

Also there's the fact that the DR options keep changing constantly. And there's a very big sector of participation conditions that create uncertainty and risk.

Separating energy efficiency and demand response can also lead to inconsistent investment and operating recommendations. What I mean by that is the programs in energy efficiency are very different from what the programs are for demand

response. So people don't understand the relationship between demand response and energy efficiency. And how, you know, the investment for these two could be scaled up in a way that one could be used for the other.

And there's also a lack of communication and technology standards which increases the costs, reduces effectiveness of both energy efficiency and demand response. And further complicates the operations.

Finally, there's also a lack of good energy information systems and performance monitoring tools which also create a barrier in operation and investment.

Next slide, please. So what the next slide shows are DR results of manual and automated. This is a lesson that we learned over the course of about six years of research from 2002 to 2008 here at the Demand Response Research Center.

As you can see, we started research using field test with industrial grade technology and then (inaudible) commercialized the automated demand response. And then in 2007 we, you know, promoted these open communications standards, what

we call -- DDR.

These are some of the results that we learned that was necessary for the education of the customer to program certain programs and technologies into the market.

What we also learned -- automation, better response. And the slide clearly shows that for 2007 -- what you see is the red dots with automated demand response, and the grey/blue triangles which are without auto DR. There's clearly 9 percent of difference between the automation customers and the ones that are not.

So these, you know, -- levels of what we've done, around 15, 20 percent of -- well, significantly more than what they (inaudible) customers with manual demand response did.

The customers ranged from retail, offices, private companies and some of the schools, so on, so forth. And it's also coming from the industries, which are not many in this, but we were trying to get them moving forward in the future.

Next slide, please.

ASSOCIATE MEMBER ROSENFELD: Wait a minute, Girish.

MR. GHATIKAR: The other --

ASSOCIATE MEMBER ROSENFELD: Wait a minute, Girish.

This experiment that you just showed on the previous slide, what was the motivation? Was there a time-of-use price change or something like that? I mean I don't know what the -- without auto demand response what their motivation was to do anything. Is that why they had -- maybe that's why they had no effect?

MR. GHATIKAR: The motivation was major -- of the technology, you know. The specific technology. Because mostly what happened in manual demand response, the technology (inaudible). So if there's a manual demand response today, and manual demand response tomorrow, the strategies they're using today may not be -- tomorrow. The person who did this today, or maybe I'm just explaining, it's not the same person. So there are lots of lessons that, you know, need to be --

ASSOCIATE MEMBER ROSENFELD: No, no, that's the response. What was the motivation? Why were people trying to respond either automatically or not automatically?

MR. GHATIKAR: We don't know about non automatically so much as we know about automatically. People are trying to respond not only because, you know, they felt the need for doing it. Their own incentives that offered them a good reason to go ahead and implement these technologies to automate the process, which kept them in the loop, and a lot of people like that, like doing that.

ASSOCIATE MEMBER ROSENFELD: Okay.

MR. GHATIKAR: Did that answer the question?

ASSOCIATE MEMBER ROSENFELD: No. I don't know whether there was a price motivation or a promotion. I don't know what they were -- why they were trying to respond. I just can't understand; maybe I wasn't listening. What were they trying to accomplish? Were they trying to save money?

MR. GHATIKAR: This is for demand response, definitely they would like to save money. Motivation as to saving the money during peak demand charges; and second one is to make sure that they'd less get constraint.

So these are the two basic motivation

that we, you know, we (inaudible) for demand response.

ASSOCIATE MEMBER ROSENFELD: Thank you.

MR. HUNGERFORD: I have a quick question. This is David Hungerford.

MR. GHATIKAR: Sure.

MR. HUNGERFORD: I see two variables confused here, with your auto DR project here, doing two things. You're providing equipment and you're providing the automated signals. So you have the automation, and that has an impact.

But you also do an education with the customers. You're working with the customers to develop shed strategies. You're investing time and effort in tutoring these customers and teaching them how to respond.

So, with the manual responders, did they have -- did any of them have a similar type of education, or are we not able to distinguish between the impacts of education and automation in the case of the auto DR response?

MR. GHATIKAR: That's a very good question. Let me come to that point by just explaining the education process. When we educate them, when we educate the customers here in this

case of automated demand response, we educate them on the basis of using a technology to, you know, implement a predesigned strategy that programs them for a long-term initiative.

You know, you get a strategy now that could be applied tomorrow, then you do design a strategy program, a strategy, and the technology will take care of that. The building, itself, become intelligent. Then, you know, it's a one-time education.

But in the case of the manual demand response, what happens is, you know, the people that you educate now may not be around later. So it may not be passed on to the other people later. So that might create a barrier in, you know, in passing on education further. So that's something that we have seen, at least, and has been our experience.

MR. HUNGERFORD: Thank you.

MR. GHATIKAR: Okay, next slide, please.

So, other challenge that we've seen is through the utility DR programs, some of the baseline issues that, you know, we're trying to address. And then, of course, the rates and tariffs.

With the utility DR programs, these programs get constantly changing, you know. One program we have for 2007 and 2008 may not be there for 2009, or -- around to do the programs, the structure may change, which creates more complications for the customers who are participating in the programs.

But also the underlying strategy is that they were originally designed for the programs. But now they are different program. So this becomes very restrictive, difficult to understand and respond, including some of the -- operations that originally were designed for a specific DR program.

So we don't know if RTP is a solution. We think so because the program constrained completely off, but that's something that education and research, further research needed to look at that.

There's also a clear action oriented incentive, a long-term capital investment, which is certainly a bigger challenge for the large customer, because the larger customers have significant investment, not only in education part of it, but also in implementing -- and the

software and the control systems that handles the large customer, the large commercial and the large industrial, specifically, that have a significant investment.

Another example is the baseline. You know, we have different baselines -- demand response for PPT and DVP (phonetic). (inaudible) program may not be, you know, -- in estimating the real DR savings.

There is, again, -- adjustment baseline which we also looked at. And -- temperature baseline which takes into the account the outside air temperature when (inaudible).

And further details on some of the baselines that we studies are on (inaudible) Demand Response Research Center. It's available on their website as listed. But these are the kind of challenges that we face. And how we could use these challenges into education and further implementation.

Next slide, please. So, the slide shows you a very clear picture of the framework for energy value chain. The energy value chain is basically, you know, when you look at the energy efficiency you see that service levels are really

optimized. (inaudible) energy efficiency used the service level completely optimized.

And there's many other in between that people don't understand. They take them to be separate. Things like the peak load, daily time-of-use energy rates. And as you move forward towards the DR, and real time DR, you know, the incentives, the rates, the tariffs and the structure the utilities now offer are very different. And they are independent of each other.

The need to encourage utility budget goals and lack of this clear action relating to incentive do lack some of the support from the customer. And creates a barrier to the investment in the future.

Next slide, please. So the next slide is some of the work that we did and the challenges we faced during working towards the auto DR communication standards and integration of he technologies which might be necessary.

What you see here is, you know, it's difficult to understand for proprietary systems because every customer installed control systems and technology that are specific to what they

thought was necessary during that time.

Then what happens at later stages is a bit more, and it's like DR or time-of-use or peak load management or energy efficiency comes into the picture. But this is energy management systems or control systems are capable of understanding and handling those cases.

So it does create a lack of interoperability effectiveness of the value chain. And a higher cost, because if you don't (inaudible) to keep building them, you do incur much more higher expenses than you would have in the DR plan initially.

Then there's a lesson that we learned from, you know, the challenge, or lesson or challenge from customer integration. For example, individual customers or aggregated customers. The difference is a customer is individual and they have a choice to program, participate in the DR program, and design a strategy that they feel is best, and change their (inaudible).

But if there is an aggregation, whether the contract one year, five years, or if it was no longer aggregated, or become individual customer, is it easy to do that. Whether the underlying

strategy is the technology can be re-used is another question.

One example of that is chain retail store in California are facing different rates and different technology. Then that's a challenge because if they're in one utility, they are -- rates. And they move to the other utility, they can't standardize the same segments of operation strategies within those two district utilities. And that does create a little, you know, a lack of interest among the retail chains, because it makes it more complex. And complex is not good.

The picture shows, you know, the classic architecture background we have of automated demand response. And the reference to their website is (inaudible) standard that specifically addresses these utility and customer issues. And how it could be used for both the individual and aggregated customers.

The picture shows a utility or an ISO on the left, highlight there information systems and -- systems. And then you have demand response automation server or DRAS. They said between, basically you could name it anything; it's basically a middle or information broker between a

customer and a utility.

So that does -- you know, an interface between the customer and utility to take this information on the DR from utility and pass it on to the customer. That way the standard information could be always, you know, the same, whether it's an aggregated customer or whether it's a, you know, individual customer.

Again, we go into the details of if it's an individual customer or aggregated customer, do they have central systems sophisticated enough to understand the signals in a way that, you know, these new technologies are, you know, the current technologies IT equipment. Maybe not. So you want to make sure that the legacy customers can also receive the standard signals, to develop, you know, a technology that (inaudible) logic and inter-relays that can translate it interconnect relay (inaudible) so legacy central systems can understand.

So, the idea here is, you know, it doesn't matter what kind of customer you are, it doesn't matter what kind of control systems you have, the standards do need to support those various interfaces, so the customers feel more

comfortable that it's okay, and will be able to do one thing. And I'm sure it's like going to other utility territory. I can still apply that there. So there is a consistency in investment and the clarity --

Next slide, please. So these are, you know, lessons, one of the lessons that we learned from standardization and the second was what is necessary in understanding the energy information system and performance monitoring tools.

The standards basically what we trying to develop define minimum fully automated demand response signals for end uses. So that, you know, there is an improved cost and effectiveness of the demand response.

When I say, you know, what these signals characteristics should be, this is, one of the aspects is the signal. The signaling to make sure that -- so that clients keep listening to the DR events all the time. And then security is very important, because you want to make sure that the customers feel safe when they're using technology.

And then it should be reliable; is very important, because if there is a DR event coming up, want to make sure that the customers hear the

signal and there is going to be load direction.

And then the signal has to be two-way communication, that lets them acknowledge. When I mean two-way communication, I don't mean the feedback of -- real time you have, you know, the shed of information. But that's something that (inaudible) to accommodate. And this does encourage scalability to let you know if we applied this standard to one, it could be applied to all.

Then there's automation. We want to make sure the signals are maintained the three programs, the DR strategies. And only controlled by the end user. The signals will only give you the DR -- information. The customer is in control to design what they would like to do with those signals. (inaudible) they don't feel that way, the data, they couldn't participate in DR, they can go ahead and opt out. So the customer feels comfortable in participating in the DR programs.

And then there's the timing of notification. You want to make sure that day-ahead and day-of signals are taken care so it can facilitate divergent use strategies. Then there's the scalable data model and sector translation.

What I mean by that is the data model architecture should facilitate different reliable and real-time pricing beyond programs and tariffs. Gives just time for reliability or for RTP, then it's not scalable because we can't apply it to different areas where only real-time pricing (inaudible).

Then we want to make sure that, you know, the industry open standards and translation are incorporated. These industry open standards and communication infrastructure are like, you know, what the IT industry is using, what we think is going to be the future, like, you know, (inaudible) architecture. Why can't we bring it to them to the building. You know, the IT in the building are not so desperate, but the way they operate are so different now that we want to make sure that, you know, the -- you know, bring them closer together.

And want to make sure that the infrastructure are integrated (inaudible) lighting control. And other devices like dishwasher or refrigerator, make sure that all those things are also accommodated.

And the ease of expandability is also

necessary, you know. This is what I mentioned previously is there's a need for feedback. You know, customers need education on what will be done in their facility. And the communication technology should make sure that there is a need, there is a hook, or it's compatible to that. And that's something that the standards also address. It doesn't have feedback yet, but it could be.

And then the goal here is to see if we can move this to Title 24 code. An example was the global temperature adjustment. In the future control systems, accounting for the global temperature adjustment. It makes it much easy for, you know, a customer to go ahead and apply the existing global temperature adjustment strategy in front of the other response. They don't have to do much, so it makes it very good for their participation.

And we also want to make sure that this is separate from the standardization, which is to understand and develop better energy information systems and performance monitoring tool.

There are lots of energy information performance monitoring tool, and things have significantly improved since last year or two with

the advancement of technology and just generally the investments and the consciousness of the people for energy.

We do necessarily need to develop a framework of that characterizes the costs for energy information systems for building energy analysis. We are working on energy information in the project. Basically looks at some of the work we did in 2003. We looked at some -- energy information, a number of monitoring tool, and applied them to a framework of how these perform. And they were very diverse among each other.

So, then we are looking at them again. One has changed in the last four or five years. How well the requirement for the customer has changed, and how the technology has developed.

So we do that work, you know, characterizing the current product to the systems developed for basically these buildings. Some of the lessons to be learned, and we're trying to apply those lessons from experience going forward into the research.

Next slide, please.

ASSOCIATE MEMBER ROSENFELD: Wait a minute, Girish. Can you go back, Dave. I'm very

much in sympathy with your bullet which says move into Title 24 in the future and do global temperature adjustment.

There are other things in Title 24 that require, like dimming of lights, or something else. Do you have any specific suggestions about -- is global temperature adjustment the only thing you would have us recommend in the load management proceedings?

MR. GHATIKAR: Not totally global temperature adjustment. One of the aspect, what I mentioned is going to more -- for the standards, themselves. So the future controls will -- the clients that is careful of listening to these DR signals.

Right now the two are intelligent enough that you won't to leave; they have way to listen to interact signals, they have way to listen to respond to internet-based signals, like XML (phonetic) for example.

So, just in case we do have a requirement for (inaudible) future controls should have with those, I mean there are laptops come with this. For example, every laptop that you have your wifi enabled, it is nothing but

(inaudible) standards, or G standards that come embedded. So if you want to connect to a wifi network, you are capable of doing it.

This indicates those central systems in the future are capable of coming embedded with the software that can listen to a DR signal, standardized DR signal. Then, you know, it makes it easy for the customer to participate in DR programs. There's no significant investment needed to go ahead and -- the controls to respond to a DR event.

ASSOCIATE MEMBER ROSENFELD: Thank you.

MR. GHATIKAR: Next slide, please. So, based on the challenges and experiences we learned, some of the customers needs for education are as follows:

The programs and tariffs need to be very clear, consistent, and based on performance incentives for both DR and efficiency. The DR incentives are different from energy efficiency. That creates a little barrier in how these things could be integrated together. Because they do form the same energy value chain. And so we need to make sure that they provide customer choice and opportunity.

Then that just respond to the needs. You know, some of them cannot be energy efficient all the time. Then they can participate in demand response, do that just like, you know, in the -- pricing 12 times a year, just six hours of the event. They are looking at close to 72 hours a year to the maximum here in California.

But they got roughly, you know, adjust that, and they respond. And we would love to move them to energy efficiency; and the DR does treat them as an education that if they can't do it like, you know, 12 times a year, probably they can do it more than 12 times a year. And we'd love to get that build out.

And also need for capabilities to maximize central system investments by allowing simultaneous participation both in economic and reliability-based programs.

And then a need for, you know, full integration of efficiency, DR technical support and incentive options. Because when education goes out to the customer, the lack of clear definition of how, you know, energy efficiency could be used with the DR option, or you know, some other option.

So there is a lack of clear understanding of what these value chains are, and how they could be used within the existing, you know, incentives. There's a need for a standard of communication, open communication and messaging data, all those.

And integration of technologies. We don't know, you know, how and what the integration is there. But we know there is a need for it. The energy efficiency technology looks quite different from the DR technology, and then from the daily peak load management technology.

But there is definitely an integration option that, for example, whenever we go to the customers and talk to them, they have demand limiting strategies, where they use level of strategies to limit the load on the time of the day. Because they don't want to get hit by demand challenge.

We get probably, I'm trying to think, demand limiting strategies for DR options with a little modification or no modification. So there is a lack of emphasis in education about a lot of it there, that definitely ends in the need for it.

And also the industry supported case

studies and energy information systems and performance monitoring tools to support investment and operational decisions, you know. There is a need for these, and we know that, you know. The customers, if they are educated on how they're using their energy, they can perform better in their consumption and in their actions.

That is something that also is, you know, needed as we move forward. An example is since we got electric users, InterAct by ITRON. This is, as information systems, that does tell customer how they're usage pattern is, what they're doing.

But can some other tool that is being used. On this tool you can't be integrated with demand response or other -- value chain. So there's a need for these kind of studies.

And then the need for DR control strategy guides and savings estimation tools for different sectors. Our studies of 2002 to 2007 primarily focus on the commercial side strategies, like HVAC and lighting loads. We have a strategy guide on the website that does describe it quite in detail, how the DR strategy can be applied to a building.

But there's also need for including, you know, of these set of strategies or planning these set of strategies for the industrial customers. Because industrial customers are a challenge. And every industry strategy is different. The one strategy we use for, you know, -- might be different from food processing or refrigerator warehouses. And might be different from a data center industry.

So, there's a lack of clear strategies that needs to be defined for industrial, because it does (inaudible) customers that, you know, might be very helpful in participation of significant load during a DR event.

There is also a research underway right now, in the R&D, to look at the small commercial buildings. You know, the small commercial buildings are typically less than 200 kilowatts. And they don't have this technology like energy and demand control systems, or interval meters from the feedback so that they can look at the energy information systems and monitor. So can be, with a minimum investment, do, you know, bring these small commercial customers.

And if there is, what does the

(inaudible). Publication and studies we have done, and it does describe the need for such research and programs for customers that could be, you know, development of DR and demand side.

I mean, in general, what, you know, there are two final statements I'd like to make. There is a lot that we can do out there. And then what lessons that we have learned.

Specifically in California from automated demand response for commercial and industrial, could be applicable to wider audience. And that's something we need to explore.

Thank you.

MR. TAYLOR: Thank you very much, Girish. Do we have any questions?

All right, thank you, Girish. I hope you can stay with us for the remaining presentations.

MR. GHATIKAR: Sure.

MR. TAYLOR: We are running a little bit behind schedule, but I'd like to welcome our next speaker, Dr. Mithra Moezzi to discuss the 2007/2008 SMUD Power Choice time-of-use program.

(Pause.)

DR. MOEZZI: The research into action

team received a grant from LBL's demand response research center to study a pilot residential TOU rate offered by SMUD.

In collaboration with SMUD, research into action has been conducting this research since spring 2007. We're about two-thirds of the way through.

Here's the research into action team. Susan Lutzenhiser is the Project Director. Here's the SMUD team, and we have an advisory group including Loren and David.

I want to start 100 years ago, residential time-of-use was actually promoted by engineers around the turn of the century when the group was first being developed. It was a very logical thing to do. Back then the problem was lighting, and there was an attractive offpeak load which was charging electric vehicles.

They had the capacity to do time-of-use metering, though the costs were still one of the considerations. So some residential time-of-use -- - some time-of-use rates were offered back then. This faded away by about 1920 until the '70s and '80s reliable when economists started pushing this, especially around the time of the energy

crisis.

So, residential time-of-use rates are actually commonly offered; 148 utilities in the United States offer them. But they're not very well subscribed. Less than 2 percent of all residential customers nationally have a time-of-use rate.

So there's two questions here. Why is uptake so low and what are the implications of this long-term, to the extent that what people do is related to the cost of electricity in each time; what is the implication of this long-term entrenchment of the non time-of-use rate for instituting time-of-use now.

So, along with all these time-of-use studies there have been time-of-use rates, there's been a lot of time-of-use studies. Most of them attended the technical aspects, such as looking at elasticities or peak reduction.

Two recent studies in Canada have looked at behavioral aspects of time-of-use. One by BC Hydro and another by Ontario Energy Board, smart pricing. And this latter one, there was very high interest among the customer base. This was because it was preceding a mandatory smart

metering. But they got more than 30 percent of people interested in this.

This was a seven-month pilot, and average savings was 144 a month, about 75 percent of the people saved energy average saving based on shifting was 144 a month. So people saved, not a lot. And they did succeed in some summer peak reduction.

ASSOCIATE MEMBER ROSENFELD: Mithra, I'd like to make a point that an awful lot depends on the design of the offer of time-of-use pricing. You said that, what is it, 1.4 percent of these experiments have time-of-use pricing.

But in -- it's 100 percent of everybody has time-of-use pricing.

DR. MOEZZI: That's right, depending on the scale, yeah.

ASSOCIATE MEMBER ROSENFELD: Go ahead.

DR. MOEZZI: Okay, so we're building on these last two research here in research into actions research. There's two data screens.

One is surveying customers in three waves. And here we asked people about their demographic information, what they did under the rate. And second, collected consumption data for

both the Power Choice, that is the time-of-use participants and the control groups.

We want to test the effects not only of the price, the time-of-use rate, but of two information interventions, which I'll explain later.

As to recruitment, the initial uptake was not very high. At first there was sort of a formal random sample stratified by customer usage, but that didn't yield enough, so the low initial response led to a more relaxed recruitment process.

By March -- that should be 2007 -- 330 people were enrolled, and two-thirds of them received a Centron SmartSynch meter. There was problems with the other third, so our working population was about 220 people. Some people could opt out along the way, and so far we've had about 39 opt-outs.

So here's where we are now. The two types of interventions are underway. The latter has just started. Two of the three surveys have been completed and billing data is ongoing. And I'll be telling you about the initial analyses of survey and consumption data.

Here is a description of the two types of intervention. One we call the enhanced information intervention. And both these interventions are applied only to subgroups so we can statistically test them as treatments.

The enhanced information gives some technical information beyond the usual. It's basically community-based, social marketing principles. So the idea is not only to provide technical information, but to increase the sense of community and sort of make this time shift, this shifting use normal.

The second intervention is the one that just begun. This is the use of real-time consumption monitors. The literature suggests that dynamic feedback improves ability for demand -- to reduce consumption. The typical estimate is about 5 to 15 percent, but this really much depends on who you're asking and in what period and for how long.

There's a lot less known about shifting time-of-use pricing in combination with feedback monitor. So that's when the questions that we'd be able to add something to.

Here's some examples from the enhanced

information intervention. People have been -- this one group has been sent a series of letters. And here's an extract from one of the letters.

Here they've been -- this is sent from the SMUD Program Manger, Carol Novak. Here they've been given some of the survey 1 results, kind of increased sort of norm in community building.

And the second is -- this is a refrigerator magnet, actually. And the Ontario study showed that the refrigerator magnet was one of the most important or useful prompts for people. You can also see from this magnet that the rate is pretty complicated. I'll talk a little bit about that later.

Here's a picture of the monitor. This is the Blueline monitor that Loren mentioned earlier. I won't describe it since you already know. And the survey findings to date.

Two surveys have been conducted. First in August 2007. We successfully got about 123 of the 210 customers who were on meters at that time. And for some of them this was very early into their time on the rate. So here reflected baseline data and demographics.

2007 we reflected on the summer and winter actions. And began to assess the enhanced information.

So survey demographics: 90 percent of the people we interviewed -- we surveyed had their own dwelling; most were single family. And compared to Sacramento County things were about what you'd expect.

Household income broadly matched; participants were more highly educated than average; dwelling age and size broadly matched. And perhaps the most interesting thing is that the head of households that we got, or at least the people that we spoke to on the phone, were quite a bit older than typical. We're still trying to figure out what's going on there. But the average age was about 60 compared to 51 as the median head of householder age.

So the implication here is there's probably more likely to have somebody at home in the daytime. In fact, we found that 72 percent of the people said somebody was always or almost or usually at home during the daytime. And there were fewer kids at home, too. And quite a few are only two-people, one-or-two-people families.

We asked people why they joined PowerChoice and the strongest interest was definitely in saving money. At least two-thirds spontaneously mentioned money. And there was different levels of interest in this money. Some people said, I used to be middle class; the government has put me at poverty level. And other people just wanted to save a few bucks. One-third said just money.

I think this is quite a reasonable response in a way, too, because this is the two things you can get from a rate that you couldn't do without the rate, are a change in how much you pay, a reduction, and possibly more information.

Very few people mentioned the environment, even though this was part of the way that the program was promoted. And a few people said I did it because SMUD asked me, or it's a good idea for the future.

What did people think they would have to do. Fifteen percent thought they wouldn't have to make any changes in order to save some money. And 15 percent thought they would have to make a lot of changes. And very few said they had reservations.

Now, this slide is from an open-end response. We asked people to spontaneously tell us why they joined PowerChoice. Here's the closed end partner to that. We asked them to check off one of five reasons why they joined PowerChoice.

And 96 percent, that is hardly anybody didn't say saving money. And all of these -- can you read those reasons?

ASSOCIATE MEMBER ROSENFELD: No.

DR. MOEZZI: Okay. Save money by using electricity at lower cost times. That's the first bar. Have better control over energy costs. Help SMUD avoid potential blackouts or brownouts. Help the environment. And contribute to energy security.

So nobody said energy security is open end response. But when you ask them to check off the box, a lot of people said that. So basically we'd say people are very interested in saving money, with some other reasons playing a supporting role.

You saw earlier that the rate was fairly complicated. There's four seasons, a winter and a summer and two transition ones. On weekdays there's three times-of-use; on weekends and

holidays there's two times-of-use.

And people said that despite the complexity of this rate, that they knew what was going on. We're not sure if that's true. Some people said, oh, I want some more prompts, I want to know what it is, or the rate should be more complicated. But most people said, oh, we know it, we got it.

One of the innovative parts about this rate was something called the consumption adjustment. This consumption adjustment rewards conservation or rewards low consumption. And it depends, it's a charge, everybody got some sort of consumption adjustment.

If you consumed less than 1000 kilowatt hours it would be a credit. More than 1000 kilowatt hours it would be a charge. And the level depended on how much over or under you were.

For example, if you consumed between 1000 and 1500 kilowatt hours per month, it was a 20 percent surcharge on your bill. So, it's quite a bit.

This was noted in the material, but this is one thing that people said they didn't know about when they joined. About half received a

charge at least once. But a lot of them didn't recognize that they did. But some of the high consumers, of course, were quite concerned about this because it adds quite a bit. So it tweaks the time-of-use rate to sort of control consumption as well as just time-of-use.

So Loren has already talked about this. I just want to note that 85 percent of the people we spoke to who said they did something, said that they already were conserving. So most people think they're already conserving energy, and they are.

What did the households report doing? It was pretty clear that people understood that shifting was key. Two-thirds of the people said that they shifted some end uses. And the top use, this is from our second wave survey, and the results are a little bit different from the first wave survey, is 80 percent of the people said that they reduced air conditioning use, either by turning off the air conditioner or raising the temperature.

And surprisingly, when we asked what people thought about doing this, and about half said it doesn't make me at all uncomfortable. And

half said it isn't at all inconvenient. So if this is true, we could ask why they don't do this all the time.

Also about three-quarters changed laundry times.

ASSOCIATE MEMBER ROSENFELD: Excuse me, do you have any idea how -- what you said was they reduced A/C use.

DR. MOEZZI: Yeah.

ASSOCIATE MEMBER ROSENFELD: Do you have any idea whether they set up the temperature one degree or five degrees?

DR. MOEZZI: Yeah, it's a good question. I don't think that we really got there. We got some information about their previous use, but we don't know how much they did. It's a very complicated thing, obviously, to measure. And they didn't always do it. So, no, we don't know.

ASSOCIATE MEMBER ROSENFELD: Thanks.

DR. MOEZZI: Okay, changing laundry time. About three-quarters. And an interesting one, which was usually automatic, is that 15 of the 18 -- this is the one people have pools, obviously -- 15 of 18 who already hadn't set their pool filter to run on offpeak time said that they

did this. This is sort of a stunning success. And I still wonder what's going on there.

People mentioned a lot of other things, and I'll give you some more examples later.

Two-thirds of the people also said they -- two-thirds of the people actually said they shifted and conserved. And reducing A/C use is obviously, usually conservation, as well. The main conservation people said was lights, or just general conservation to try to use less. And some people thought something new.

Here's a summary of some of the -- we collected this in open end. We asked people just what they were doing. And we allowed them to give us many actions, up to five actions.

And here, this is a sort of gives you a flavor of things that people said. There is a combination here of enabling actions and actions that actually reduce energy use, or shift energy use.

How much effort did people put into this? I think some people put in quite a bit. And you can tell this by looking at the open end responses. One person said, well, I wake up at 4:00 in the morning to do my laundry. Other

people said something a bit more mild like, well, I leave the house during the peak times; or I only let my wife bake after 10:00 p.m. Or change how they cook, barbecue, crock pot. So these are people who are really taking this rate very seriously, at least that's what they're telling us.

And some people said they tried to use no A/C at all. Most people are probably more moderate. Some people seem to think of it as a project, something fun maybe they could do with their kids, or just sort of to game the system.

Some people were pretty minimal, just said they turned off the light. And interesting, 23 percent of the people said they didn't do anything.

So, what was the effect of all of this. This is going to come out later, when we finish the analysis of the consumption data. But it was clear that people understood air conditioning and pools as big ticket items. So people did that.

They also did a lot of stuff that really wasn't very well targeted to either saving money or power. Some of the things people did likely didn't save or shift.

For example, washing dishes by hand. Or at least not much, things like making the coffee in the morning and microwaving in the afternoon. Or reducing computer use. Even clothes washing is a little bit questionable because most people have gas water heating.

So the question is did people really have to know what to do, or is a sort of a general consciousness enough. Did people think that they saved money or saved energy. I think they could tell at any point when they shifted laundry from a peak time to an offpeak time. Then in that sense that they saved something, a virtual savings.

Whether they saved on the actual bills was much harder to tell. Even on a normal rate bills easily vary from month to month by 25 percent. So you can't really tell what's happened.

And these bills did not show a comparison to what they would have had on the normal rate. Some people mentioned that they wanted more information on their bills in order to see that they had saved money.

The preliminary price effect analysis that Jamie Woods did supports initial reduction in

superpeak use. That is, it looks like, at least at the beginning, people did save, the PowerChoice people did save, did actually shift onpeak.

What didn't people do. There was a quarter, I said, who said they didn't do anything. A lot of these said they judged their usage already matched the TOU rate, so these were our freeriders. Or they didn't know what to do.

And interestingly, most of the people who didn't mention money as a motivator, said they changed nothing either. So this is sort of an odd dynamic. You joined the program for some reason but you wouldn't do anything on it.

What didn't others do. People stated their limits. Some people said, I like the house cool. And line-drying clothes was particularly interesting. Now, only 30 percent said that they always or usually line-dried, line- or rack-dried clothes. But most of these had done this before starting powerChoice. So only a couple people said they started this after joining the time-of-use rate.

So we asked them why not, why didn't you change this. And we got some pretty clear answers. One person said, I used to do that 20

years ago. We're going forward not backwards. Other people had some more practical reasons, I'm too frail. The homeowner association doesn't allow it. I don't have a clothes rack. Or I want fluffy clothes.

And one person said, my dryer is high efficiency, which is quite interesting from the behavioral aspect. To the extent that we have more and more end uses in the house and more and more efficient end uses, this sort of -- the effect of behavior on changing anything or not becomes more minimal.

So other constraints. People mention not only their own comfort and convenience, but often said or blamed it on their spouses. My wife needs it this temperature. Or my kids do this.

And one of the most interesting things was with health problems. A few people mentioned that there was health problems in the family.

And there was some sense in which it wasn't clear if people knew where to stop in terms of conserving or shifting. And this is a problem that was noted back in the energy crisis, as well. People try to conserve too much. Turn off the air conditioning when it's too hot. And also people

just want a nice house for their family.

Well, what's going on behind all this demand response or nonresponse. We tried to get a little bit at the dynamics of the family. A few people said that the actions they undertook were onerous. And only 10 percent said that there was any problems in the family, any sorts of disagreements between what one person did and the other person did. But between the lines there seemed to be some sort of family strife.

I want to mention this very interesting study in Sweden where they actually interviewed families about the burdens of the energy conservation actions that they were supposed to undertake.

Supposed to wash clothes offpeak; line-dry clothes; handwash dishes; reduce temperature -- - of course, we're talking about winter here. And would this actually create some sort of stress on the family.

And in particular it creates a stress on women, a disproportional stress on women. So it was sort of an interesting question here. At what cost are these people providing demand response.

What did people think of the program.

Early on, the first bills, people thought that their bills were higher than they expected. But even in December 2003 two-thirds still said they were satisfied with the program, and most of the rest said they were neither satisfied nor dissatisfied.

So, in summary, what do we have. We have people that clearly understood what the rate was about. They reacted with, I think, or said they reacted with quite a bit of precision in doing the right things. They also reacted with imprecision in doing things that probably didn't help very much.

We still don't know what the effects of the interventions have been. This will be coming up in the next survey. And so the question is will they continue to react. And did they actually deliver demand response, which we'll see with the consumption data, and from the map, to the extent the coming map the things that they said they did to actual savings.

We had 50 monitors, these Blueline monitors, to give out. And when we solicited all 191 of the PowerChoice participants, the remaining 191, we got 53 takers. So actually fairly low,

just a bit more than a quarter of people were interested in these monitors. They cost $100 or more than $100. But there wasn't a very high uptake of them. Still we got 50 percent.

And these have been put in the field now. So far 20 have been installed. Twenty people are having trouble. And the research into action team actually put together a training manual. We'd seen from these earlier studies that people had trouble putting in these monitors. So we developed a training manual that tells people what to do and what this kind of stuff meant.

So, this next survey is coming up to assess the actions taken in the summer, what people think of the program overall. And to complete the analysis of the consumption data. The report will be finished in winter 2008/2009.

There's contact information.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. This is pretty basic and I guess I just sort of didn't get it when you were describing it. What sort of pre information was given to customers? How much were they already told in advance about the kinds of actions that would make a difference, and how they would do it,

and what kind of technology was available to assist them?

DR. MOEZZI: Yeah. This was in the recruitment brochure and it did tell them some things to do. So every customer got this recruitment brochure. And I think that it did mention shifting laundry. It didn't give a lot of detail. Some people it told to look on the website. So they got sort of basic information.

PRESIDING MEMBER PFANNENSTIEL: But it wasn't really geared towards informing them in advance, showing them the kinds, other than the whatever that one device was, the monitor --

DR. MOEZZI: Well, yeah, --

PRESIDING MEMBER PFANNENSTIEL: -- there really wasn't any technology that was encouraged?

DR. MOEZZI: No, there wasn't technology that was encouraged. There was, you know, of course those two treatment groups. One where people were told quite specifically what they could do. And then later this Blueline monitor. So, yeah, I think they noted they're supposed to look on the website to see how much any sort of end use uses.

PRESIDING MEMBER PFANNENSTIEL: Other

questions?

ASSOCIATE MEMBER ROSENFELD: Yeah. I have a similar question. You said most people, I think you said most people don't have a very good idea about what's important. The air conditioner is obviously the dominant load, and clothes washing is -- well, pool pumps -- clothes washer.

Given that you have interval meters on these houses, have you thought about, or has anybody got a software program which teases out the air conditioner use? That is, given the previous day, with the air conditioner cycling on and off, and probably not running at night, it should be possible to do a pretty good job of teasing out the air conditioning dollars or kilowatt hours from the previous day.

Does anybody offer that service?

DR. MOEZZI: Not that I know of. I don't know what interval these interval meters are actually collecting data. But, no, I don't know anybody who does that. I mean, people used to do that a long time ago, but for now, no one -- we haven't thought about doing that.

ASSOCIATE MEMBER ROSENFELD: Okay, thanks.

MR. TUTT: I had a couple questions. First was you mentioned that people reduced air conditioning use, and then generally reported that it was no inconvenience, not a problem.

Is the implication is that they were using more air conditioning than they really needed and they didn't know it?

DR. MOEZZI: You could probably say that's true in most cases, because people used to live without any air conditioning at all. Granted in different kinds of houses.

I think there's probably two effects. One that they could reduce the consumption, especially if there's a reason for doing it. And probably the other is they might be reluctant to say, once they've done it, they don't want to say, well, that was hard to do. They just make it convenient or make it not uncomfortable.

MR. TUTT: And the second question was you don't have a quantitative results of exactly how much power was saved in different periods at this point, but that's coming up in the next analysis, next survey?

DR. MOEZZI: That will be coming up, yeah. Yeah, we did have one preliminary result

that showed that people did seem to -- the PowerChoice persons did seem to save, relative to the not, onpeak.

ASSOCIATE MEMBER ROSENFELD: Yeah, I have one other question. You said on slide 11 that your tariff was a little bit complicated because you had time-of-use as well as tiers.

DR. MOEZZI: Yes.

ASSOCIATE MEMBER ROSENFELD: Now, there, although I can't read it, so people were able to understand pretty well that you could combine tiers for usage at the end of the day or the end of the month with time-of-use pricing during the day?

DR. MOEZZI: I don't think people necessarily understood that. I mean people definitely tried to conserve at the same time. But it's not clear that that was because of this consumption adjustment or not.

So I don't know how well they understood that. People said they didn't know about it. I don't think they particular thought about it. And there's also only so much you can do. If you've usually got 2000 kilowatt hours per month you're not going to be able to reduce it at lot.

ASSOCIATE MEMBER ROSENFELD: SMUD has a voluntary -- not this experiment, but SMUD has a voluntary time-of-use rate. Does that have tiers now?

DR. MOEZZI: The voluntary time-of-use rate that's not our choice? I don't know.

PRESIDING MEMBER PFANNENSTIEL: We have somebody from SMUD --

ASSOCIATE MEMBER ROSENFELD: Vikki. I hasten to say I'm not a SMUD customer, and I've never seen one of your bills, so.

MS. WOOD: Vikki Wood from SMUD. We have a regular time-of-use rate which is really a time-of-use rate, not a time-of-use rate superimposed upon the standard tiered rate, which is what this PowerChoice rate is.

ASSOCIATE MEMBER ROSENFELD: Um-hum.

MS. WOOD: And, yes, we do have that. And we have customers that are currently participating in that rate. We don't advertise it because we're just, well, for a variety of reasons.

One of the reasons is with a true time-of-use rate, of course, only the large, the tier three customers really benefit. And they can

benefit without changing behavior, because currently our tiered rate structure, the tier three customers are subsidizing the tier one customers.

And so that's always a problem when we have -- hence the reason why we have this sort of complicated PowerChoice rate, where we're superimposing times-of-use on the tiered structure.

I'm sorry, what was the rest of your question?

ASSOCIATE MEMBER ROSENFELD: That's okay. I'm happy.

PRESIDING MEMBER PFANNENSTIEL: And, Vikki, you will be on a panel later, so we can talk more about this?

MS. WOOD: Yeah.

MR. TUTT: Commissioner Rosenfeld, as a PG&E customer, I am on a voluntary time-of-use rate that is superimposed on tiered rates.

PRESIDING MEMBER PFANNENSTIEL: Right.

ASSOCIATE MEMBER ROSENFELD: And you get it. Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much.

You know, we're moving into lunchtime, so I'm going to suggest that we break now. Come back and pick up Karen Herter at 1:00.

So, okay, we will be back here at 1:00.

(Whereupon, at 11:51 a.m., the workshop was adjourned, to reconvene at 1:00 p.m., this same day.)

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AFTERNOON SESSION

1:05 p.m.

PRESIDING MEMBER PFANNENSTIEL: Good afternoon. We are running a bit behind schedule, so maybe we should get started now.

(Pause.)

PRESIDING MEMBER PFANNENSTIEL: Ms. Herter, are you on?

DR. HERTER: Almost.

PRESIDING MEMBER PFANNENSTIEL: Okay.

(Pause.)

DR. HERTER: Okay, now I'm on. Hi, my name's Karen Herter. And I work for the Heschong Mahone Group. Unfortunately in the agenda it said the Demand Response Research Center. I used to work there. And the work that I'm doing is funded by the Demand Response Research Center and also by SMUD.

My Associate here, Josh Rasin, will be helping along. He's the fellow that's talking to the customers. So if anybody has any questions about customers, he's your man.

We are working on a small business pilot program where we are giving customers thermostats. And it's a behavioral study, so there are lots of

surveys and emails and interviews.

The pilot started in May 2007. In September 2007 we provided a report, a market characterization report, to SMUD on which areas of the SMUD service territory would be best to target, and which customers to target.

In October we did focus groups; in the spring of 2008 we recruited and installed all the thermostats. And right now we're in the middle of a field study. Our final report is due in December.

So, work that's been done in this area. The California statewide pricing pilot had a CPP component. It showed that there was a 13 percent reduction with programmable communicating thermostats, and a 23 percent reduction with more advanced controls. So we know that the small business sector can respond to critical peak price.

Southern California Edison did a load control study that showed half a kilowatt per rated ton A/C load drop during load control.

Some of the shortcomings, I think, of these studies --

ASSOCIATE MEMBER ROSENFELD: Karen,

Karen.

DR. HERTER: Yes.

ASSOCIATE MEMBER ROSENFELD: Can I ask you, your top bullet, 13 percent reduction with PCTs, but a 23 percent reduction with more advanced controls, what were the added features to go from 13 to 23?

DR. HERTER: Yeah, the added features, it had lighting controls, and it also had feedback, real-time feedback on what kind of energy they were using at the time.

ASSOCIATE MEMBER ROSENFELD: Okay.

DR. HERTER: The ADRS pilot, you might remember.

So, in this pilot our main goal, it's a behavioral study, so our main goal is to figure out what do customers like, what don't they like, what are they doing, what are they not doing. We are going to do a followup that looks at load drop, but it's not the main focus of the study.

And a little background again. This is a graph that shows the load drop of small commercial customers when their thermostat is increased by 4 degrees Just another indication that, we knew from the outset that small

commercial customers could drop load. And we wanted to see what would happen under a couple of different scenarios.

When we did focus groups we found that the small business customers really liked the idea of having a thermostat that SMUD could use to communicate to them. They wanted to know what was going on on the system, and they liked the idea of being able to contribute to the system.

The one thing that they were concerned about was that SMUD would be taking information out of their premises. One of the customer said, you know, is there going to be a camera in there, are you going to be watching us, what kind of information are you taking from us, and what are you going to do with it. Is it the government; is it big brother. So we got a few of those comments.

They liked the proposed DR programs, which I'll discuss in a minute. All the customers, just like residential customers, wanted some economic benefit. That was the main driver. And we offered them a choice between we presented both a critical peak pricing rate and also a payment for offset.

And they overwhelmingly, at least in the focus groups, preferred the critical peak pricing rate. They said because it provided more flexibility. They could override it whenever they wanted, and also they could contribute.

For some of them it was really important that they could contribute with loads other than air conditioning. For example, restaurants said they really couldn't contribute any air conditioning load, but they could turn off lights or do other things.

Customers really wanted help and information from SMUD. This is probably, you know, -- these are focus groups, of course. These are people that volunteer. These are the types of people who are looking for help.

They wanted options for audits. They talked about audits quite a bit. And they wanted efficiency recommendations from SMUD, and also business recognition.

When we asked them how to contact them, they said they absolutely ignored bill inserts. I don't think a single person said they looked at them. Suggested sending separate letters. Some people said they preferred to get phone calls.

But, by and large, they said send a separate letter with something important.

So, based on the focus group findings, we designed a pilot for this summer. And our goal was to quantify behavior and perception differences between two DR program types. And also between small business customer types.

We offered two DR programs, like I said, critical peak pricing with a one-way PCT that was optional for the critical peak pricing. And a temperature offset of 2 or 4 degrees, and it was the customer's choice. In this case, of course, the PCT was required.

We started off with a goal of 100 participants. All of them less than 20 kilowatts, small commercial customers in the SMUD service territory. And we looked at three sectors based on our market characterization report, retail, restaurants and offices. Largely because retail and restaurants had such high loads, and offices because there are so many of them.

The benefits to the participants include $120 cash, $60 upfront and $60 upon completion of the pilot, a free digital thermostat which is a $200 value. Again, it's optional for CPP because

CPP customers will just pay what the rate is. If they want to reduce load in other ways, they can. Doesn't have to be A/C load.

We offered them personal help with efficiency and load reduction because that was what we found they wanted. So basically our offer was we'll help you with efficiency if you give us demand response. And I think that worked really well.

We gave them, of course, the opportunity to save or earn money on their 2008 summer electricity bill through the rates, by reducing load or as a payment for load control.

And as part of the startup we gave them SMUD rebate and program information, everything that was applicable to small commercial customers.

And finally, because in the focus groups they said they were interested in business recognition, we had designed, with help from SMUD, of course, official display placards that show that they're part of a community effort to reduce peak load.

Here's our display placard that shows, you know, we're doing our part to save energy; we're part of the community; we're helping protect

the environment. And at the same time they display this, those retail and restaurants, at least, those that have customers, people that come in and see it are not only seeing that this business is helping, but they're also learning something from it. They're learning that, you know, using less electricity between 4:00 and 7:00 p.m. is a good thing.

So here's a brief overview of the programs in our study. The critical peak pricing rate consists of a discounted time-of-use rate, and in exchange for the discounted time-of-use rate they get high prices during 12 critical events just for this one summer. The rates, of course, apply to all appliance use, not just air conditioning.

The PCTs that we've provided can precool the building and be programmed to float during events or not. The customer has complete control over whether they precool and over whether and how much they float during the events. The PCT can be changed at anytime by the customer, including during the events.

The bill from SMUD shows change in bill relative to the standard rates. So they get their

standard rate bill, and then they also get the new summer solutions pilot bill that shows here's what you would have paid, here's what you're paying on the new one.

For the temperature offset program we did an analysis that showed that the payment for a 2-degree A/C offset would be, should be about $5 per month for this size customer. For a 4-degree offset, it's about $10 per month. So we tried to keep it roughly equivalent between the CPP rate and the temperature offset program.

Again, the PCTs can precool. But it's up to the customer whether they want to precool or not. And in this case, of course, there's no incentive to reduce lighting or anything else, microwave ovens.

Here's a representation of the rate, the critical peak pricing rate. It runs from midnight to midnight, and you can see in the middle of the day between 4:00 and 7:00 p.m. On weekdays only it's 13 cents, 13.11 cents.

We showed the standard GSN rate is 11.27 cents. So, in every period except for weekdays between 4:00 and 7:00 p.m., the rate is lower.

And then on critical days, the 12 days

there at the top, the price is 57.15 cents per kilowatt hour.

Are there any questions on the rate? Is it clear?

Oh, and the design of this, what I did here, you know, because this is something we present to the customers. We made magnets of this, too. I'm not sure how useful that would be in, say, you know, an office environment. Nobody has metal cabinets anymore. But, they were cheap. And they're handy to have. What I did was I took a bunch of the other pilots, I looked at all of their magnets and educational material. And I sort of picked and chose the things that seemed like they made sense and pass it around to customers and to the office staff to see. I must have run them past about 25 people.

PRESIDING MEMBER PFANNENSTIEL: Karen, in doing that, did you find that -- whom were you talking to about the rates? And did they really understand them? And, you know, how difficult was -- it's fairly straightforward rate, relative to those --

DR. HERTER: Um-hum.

PRESIDING MEMBER PFANNENSTIEL: --

complex time-of-use tiered rates that we're asking residential customers to respond to. But who in the different organizations that you worked with did you talk to about the rates?

DR. HERTER: Josh did all of the talking to customers. Josh, do you want to answer that question?

You have to talk into the microphone, though, otherwise --

PRESIDING MEMBER PFANNENSTIEL: Yeah, you have to go on up to the mike.

DR. HERTER: -- it won't get recorded.

MR. RASIN: Right.

PRESIDING MEMBER PFANNENSTIEL: I mean we're talking small businesses, so is there one person who's really responsible for rates? for electricity prices?

MR. RASIN: It was usually the business owner that we were speaking with. They're the one paying the bills. And a lot of times in small business they're the ones in the shop most of the time, also.

And they received literature but by the time I was speaking with them they generally wanted a clearer understanding of what the rate

actually was. So, basically walking through with them once was generally enough for them to understand.

Some people still don't seem to understand it, but most of the people really, once I explained it, they look at this and say, oh, okay, I know. 4:00 to 7:00 p.m., that's the focus.

PRESIDING MEMBER PFANNENSTIEL: That's pretty interesting because you'd think, you know, these are people who are in the business of figuring out their costs, and have to worry about minimizing costs on a large number of their cost of doing business.

And so you had given them some written material. And then, in many cases, or almost all cases you really needed to go back and do a personal walk-through with them?

MR. RASIN: Well, a lot of times when I gave them the written material, I also made a point to go over the specific rate with them.

PRESIDING MEMBER PFANNENSTIEL: I see.

MR. RASIN: And that seemed to help a lot. There was a much more positive response. Some people were not interested in the rate at

all, and thus chose a load control program.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. RASIN: Sure.

DR. HERTER: So our plan for collecting data, we have three different types of surveys. We've conducted all of the pre-experiment surveys that have questions about, you know, who we're talking to, what kind of business it is, how many people work there, what kind of building it is, how they use their existing thermostat.

The post-event surveys we've just started. I'll show you some preliminary data from the first event. We send out an email and do calls for people that don't have email. They ask five questions about what they did during the event and how it affected their business.

And the post-experiment survey, of course, will be at the end of the experiment, and we'll ask questions about what they thought about the program, what things they'd like to change, and so on.

We're collecting 15-minute data from the thermostats, temperature, default setpoints, real-time setpoints, event notification and unit

status. It'll give us a really good picture of what people are doing and how they're interacting with the PCTs.

The load data is being collected by meters that were installed by SMUD. It's also 15 minutes. The followup analysis on the load data will come after the behavioral analysis.

This is just to give you an idea of the data that we're getting from the thermostats. At the bottom the yellow triangles show the compressor status, where the compressor goes on and off. The blue dotted line is the PCT setpoint. This is real data from one of our customers, actually next door to our building. The deli; they have great sandwiches.

And then the pink line shows the internal temperature. And so what we'll be able to do is see where the temperature is. This is also really helpful in troubleshooting. If they say they're having trouble with the thermostat, which happens quite a bit, not necessarily because there's something wrong with the thermostat. Sometimes it's just coincidence, or they don't know how to program it correctly. We can take this and look at the data and determine whether

it's something they're doing or whether it's something the thermostat is doing.

ASSOCIATE MEMBER ROSENFELD: Karen, can you go back to the -- I'm having a problem reading this. It seems somewhat backwards to me, unless the outside temperature is changing.

But in that first long pull-down, when the thermostat setting -- it's hard to read, but I guess it goes down from 75 to 60 or something. I would think that the compressor would be working hard during that time. And yet it barely came on.

DR. HERTER: Yeah, well, this was one of the problem data files.

MR. RASIN: Actually, the compressor indication is backwards.

ASSOCIATE MEMBER ROSENFELD: No wonder I thought it was backwards.

MR. RASIN: The thermostat, it's set up in a code so that you see the right axis, 67 means that the compressor is on and in cool mode. And then go to the 79, that means it's off.

So when the yellow bars go up that's when the compressor's actually turning off. The rest of the time it's on.

DR. HERTER: It's just the way they

coded the log file.

MR. RASIN: Yeah.

ASSOCIATE MEMBER ROSENFELD: Okay.

PRESIDING MEMBER PFANNENSTIEL: But then on the set temperatures, which is the blue line --

ASSOCIATE MEMBER ROSENFELD: Dashed blue.

PRESIDING MEMBER PFANNENSTIEL: The dash -- if I'm looking at the left-hand access, looks like they set them down to --

MR. RASIN: 57.

PRESIDING MEMBER PFANNENSTIEL: Thank you. And then back up to what's the --

MR. RASIN: 67.

PRESIDING MEMBER PFANNENSTIEL: 67?

MR. RASIN: On the right side, yeah.

PRESIDING MEMBER PFANNENSTIEL: Yeah. And yet the actual internal temperature is considerably higher than that.

MR. RASIN: Yeah. This is actually a couple days of data, I believe. And the peaks actually coincided with the afternoons, as the sun came over -- the building had shade, I believe, from the east side. So once it hit noon the temperature just rose inside regardless.

DR. HERTER: it's an under-sized A/C unit.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

ASSOCIATE MEMBER ROSENFELD: My friendly comment is that's a very difficult slide to interpret.

(Laughter.)

DR. HERTER: Understood. Well, it wasn't meant to be interpreted; it was just to show you the kind of data that we can get. We can do all kinds of fun things with the data. It wasn't really meant to be displayed. Sorry about that, Art.

Recruitment process. We targeted zip codes that had higher than average bills for a couple of reasons. One, we wanted to keep it within a small geographic area. It would -- just to decrease the amount of travel time that we'd have to do in installation and whatnot.

And also we used that to get their attention. When we sent out the initial recruitment letter, the very first line had said something to the effect of, you know, we'd done an analysis and found that your bills are higher on

average than those in other zip codes.

We got information from SMUD that that would be a good way to get their attention.

ASSOCIATE MEMBER ROSENFELD: Does the zip code with a higher-than-average bill mean that it's older houses?

DR. HERTER: There's a good chance. We didn't do that analysis, but there's a good chance. They're not houses, they're small businesses.

ASSOCIATE MEMBER ROSENFELD: I'm sorry, yes.

DR. HERTER: Yeah, probably --

ASSOCIATE MEMBER ROSENFELD: Buildings.

DR. HERTER: Yes. The buildings, for whatever reason, are probably less efficient.

So we sent out 1900 recruitment letters in February. We allowed response by phone, postcard or website. Received contact information from over 150 interested customers. And about half of those eventually signed up.

We expected that restaurants would be the most difficult sector and it was. And what we did, we ended up, I think maybe got 10 on the outset, maybe less. Ended up doing a lot of face-

to-face recruitment in restaurants. Still ended up short.

The breakdown of participants. We got as many offices and retail as we were hoping, but restaurants we only got 12 total. You can see on the far right. For a total of 78 participants.

They had a choice of CPP, temperature offset program, with 2 or 4 degree offset. And you can see 52 of our participants chose the critical peak pricing, while 26 chose one of the two temperature offsets.

We sent out text messages and events in early June. And the first real event was June 26th, and I'll show you a little preliminary data from that. We also called events the last couple of days, and we don't have the data from that, unfortunately.

Here's the results from the June 26th post-event survey. Twenty-six of the participants responded to the email request of an online survey. Twelve of the customers precooled, eight with PCTs and four just simply opened their windows in the morning.

Twenty-one reduced A/C usage out of 26; 13, half, reduced lighting, and three said they

just closed their business early.

When asked about comfort levels 16 said it was comfortable enough, and the remaining 10 says the event was not even noticeable, which the other options were it was uncomfortable. We had at least two options of it was uncomfortable or it was very uncomfortable.

Did customers comment on anything at all. Twenty-one said nobody said anything. One said that they got a positive comment from customers. And two got negative comments. One customer thought it was too hot, and another thought that the store was closed because she had turned off all the lights.

This is just information on the research team. Heschong Mahone Group is organizing this. We're getting funding and project support from the Demand Response Research Center and SMUD, the Sacramento Municipal Utility District. Vikki Wood is in charge at SMUD. Our research design partners are Roger Levy and Mithra Moezzi.

Thermostat communications. We're getting thermostats from Residential Control Systems in Rancho Cordova. And eRadio is providing the RDS communications infrastructure.

If you want more information you can read the PIER final project report, which is due December 2008, or you can contact me. And that's it.

Any questions?

PRESIDING MEMBER PFANNENSTIEL: I guess the general one, the generic one is how, from what you now have learned about customer response, how representative do you feel it is. Is this something that SMUD would feel comfortable using your learnings for a greater application to small commercial customers?

DR. HERTER: Two questions. I can answer the is it representative. No, it's self-selected. Would SMUD feel comfortable using the results, that you'd have to ask SMUD.

PRESIDING MEMBER PFANNENSTIEL: Well, but it could be -- I mean it could be useful for a voluntary program, for example, where they would continue to be self-selected.

DR. HERTER: Right. I think, yes, certainly you could use it for a voluntary program. But I also think that even if it weren't a voluntary program, the results would be roughly -- the results wouldn't be the same, but a

lot of the findings would be useful.

You know, people are having problems with understanding certain things, it's going to be the same across, you know, a full sample.

PRESIDING MEMBER PFANNENSTIEL: And in terms of the customer satisfaction with it, after the fact, it strikes me that some of that information might be applicable generally, what is that customers liked or didn't like about it.

DR. HERTER: I think so, yeah. Yeah. I'm always skeptical about customer satisfaction. People tend to say they're satisfied because they want to be nice.

PRESIDING MEMBER PFANNENSTIEL: Usually if they're not satisfied you hear it. Thank you.

DR. HERTER: Thank you.

MR. TUTT: Karen, just a couple of clarifying questions. In the temperature offset program, were those customers also on TOU rates at the beginning, all the way through, or were they standard rates?

DR. HERTER: They were on standard rates.

MR. TUTT: Were they part of the test that you did on June 26th? Was that how that

program worked, or --

DR. HERTER: June 26 was a real event. And so those customers were called, meaning their thermostats were sent a signal and responded, either 2 or 4 degrees, depending on which they chose.

MR. TUTT: And they participated in the survey afterwards?

DR. HERTER: Yes, I --

MR. TUTT: The full event or --

DR. HERTER: -- I didn't divide the 26 participant surveys into the two different programs, or I haven't yet. Just for the first event I think the sample size is too small to really get much feel.

MR. TUTT: But those particular customers would have had no incentive to precool like they would have no incentive to reduce lighting, because they're not on time-of-use rates?

DR. HERTER: They would have an incentive to precool because then they would feel cooler.

MR. TUTT: During the event.

DR. HERTER: During the event. They

would have as much incentive to precool. They would have less incentive to shut off their lighting, but we told them -- Josh told them that it's not a bad idea to reduce lighting simply to reduce the heating load.

ASSOCIATE MEMBER ROSENFELD: Karen, I'm always interested in the problem of actually programming the PCTs. These PCTs, were they anywhere close to the reference design, or did they involve a laptop to program them or --

DR. HERTER: No. We provided a demonstration a few weeks ago of the PCT that we used in this pilot. And it's fully customer programmable. You don't need a laptop.

ASSOCIATE MEMBER ROSENFELD: And what do you know about how difficult the customer found it to be to set them up? I thought you were --

DR. HERTER: Yeah, well, I can say that we had default settings. And Josh can tell you how he walked the customers through them.

MR. RASIN: A lot of people had a hard time initially setting up the thermostats. I generally would program the schedule with them at the point where we installed it.

I actually, on one particular occasion,

was called to come back to help him change the temperature because his wife was uncomfortable. So, some people have a really hard time with it. Other people look at the booklet that came with the thermostats that explains step-by-step how to program it, and said it was really easy and straightforward. So it was a completely mixed response.

ASSOCIATE MEMBER ROSENFELD: Pursuing this just a moment further, though, was it the majority of the time they required hand-holding, or were like half of customers actually able to do it themselves?

MR. RASIN: Initially they definitely needed hand-holding. A couple people felt pretty comfortable with it right away. Over time they became more comfortable, I feel. But a lot of them needed hand-holding.

ASSOCIATE MEMBER ROSENFELD: And do you have any feedback to Karen, for example about any changes in the graphical user interface that would make it --

MR. RASIN: It's already pretty straightforward.

ASSOCIATE MEMBER ROSENFELD: Okay.

PRESIDING MEMBER PFANNENSTIEL: At the outset you said something about customers were concerned about privacy or SMUD, how much information was SMUD going to get. Did that kind of concern go away over time?

DR. HERTER: Well, the concerns that we got about that were during the focus groups.

PRESIDING MEMBER PFANNENSTIEL: I see. But the actual customers didn't seem to have any such concerns?

DR. HERTER: I don't know. Josh, did anybody say anything like that during the --

MR. RASIN: Not really. I explained to them the data log we were putting in was just going to track their temperature settings. And that it was on an actual memory card I'd have to come back and get. And they seemed pretty comfortable with that.

PRESIDING MEMBER PFANNENSTIEL: Okay. Great.

DR. HERTER: Yeah, I think because they know that they're part of an experiment they expect that we're going to be monitoring what they do. If it were a real implementation it would be different, according to the focus groups, at

least. If they were just, you know, Joe Schmoe Business out there, I don't think they'd want anyone monitoring what they were doing.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Other questions?

Thanks very much.

So, I understand, Gabe, that we are missing Martha Brook for our next presentation, so we're going to move into the utility panel, is that correct?

MR. TAYLOR: That's correct. Hopefully Martha will be able to rejoin us after the utility panel.

PRESIDING MEMBER PFANNENSTIEL: Okay, great. How do you want -- do you want the utilities to come up to the table at once, or individual?

MR. TAYLOR: I think we'll just handle the presentations from the utilities in the same way we've handled the last few. So, we'll move into an opportunity for each of the utilities present to give an overview of their customer education experiences.

And we'll start off with Jodi Stablein from PG&E.

MS. STABLEIN: Sorry, I'm short, so you all can't see me. I'm right here.

PRESIDING MEMBER PFANNENSTIEL: I know the feeling.

MS. STABLEIN: Jodi Stablein with Pacific Gas and Electric. I appreciate you guys inviting us down here to let us share with you this very interesting topic. This is something that's very very hear and dear to our hearts. And we're so excited to be able to talk to you guys about some of the challenges we're going to be facing with this topic.

So what I'm going to do is I'm going to talk a little bit about some of the customer education challenges we're going to be seeing, what we're hearing from our customers in terms of what some of the challenges and needs they see.

Demand response will be given to them, as well as some different strategies. We can potentially be offering to help address some of the challenges and needs of our customers.

Okay. So the objective here is to educate customers to adopt a more conservation-conscious, energy behavior, especially as demand increases. We need to be able to provide

information, tools, technology so that customers can understand the options that they have; evaluate financial and environmental impacts; as well as make appropriate decisions as to whether or not they can participate.

What we're seeing right now is customers have varying levels of understanding concerning demand response, time-based pricing and the ability to manage their energy usage.

And there's typically an inverse correlation between the number of customers in a customer class and their level of understanding. So there's greater numbers of customers that are lacking the know-how and the ready means to basically manage their household energy usage and small business operations.

And there's going to be a longer learning curve as a result, because a lot of these customers have not had a whole lot of experience with demand response.

So there needs to be sufficient time to educate and engage customers on the tools, the data and the technology that's going to help them manage their usage and decide if demand response is right for them.

So, while awareness, and I know there's been a lot of discussion this morning around making sure customers are all aware of these options. That's important. But ultimately I think we all want to make sure that the behavior change occurs and is an ongoing change.

So in order to kind of have customers ultimately adopt demand response pricing behaviors that benefit themselves and the system, we're going to have to move our customers through an education process.

It begins with awareness. And customers have got to understand why this is important; what does this mean; and why do we need to be looking and considering demand response options.

The next phase is engaging customers. Customers have to be given a voluntary choice to select demand response options that best meet their needs. Because fundamentally we are asking customers to change their energy behavior, and this is a brand new concept for a lot of customers. This is not something they've really thought about before.

Sometimes I liken it to when they first introduced cellphone plans and we were asked, gee,

how many minutes do you need a month. When do you use them; do you use them on a weekday or a weekend. Do you use them in the morning; do you use them in the evening. And I started going through, gee, when do I use them. I've never had to think of minutes in terms of calls. I just basically called whenever I wanted to.

This is how we're going to have to start educating customers around electricity. And really be ingraining in them what am I doing, when am I doing it, how do I do it.

And as a result, customers need to be able to choose to do this. This is just not something that people can just automatically do, as we've heard a lot this morning. And that's the best way to get acceptance of these demand response programs where we're asking you to ongoing change your behavior, and continually be looking at how do we do things differently.

Customers need to be able to look at their choices and to be able to choose, is this the right thing for me. Because we don't want to undermine customers acceptance of this.

The next step is, okay, I've chosen something, now I've got to initially and

repeatedly use data, tools and technology to help me understand what am I doing, how am I doing it, what other changes do I need to make.

And finally, you are at an adoption, where customers, it is ingrained, it is embedded, and they are actively and doing what we want them to do, and listening to those pricing signals that we're sending them.

So what are we hearing from our customers in terms of some of the research. You're going to hear a lot of things that you heard a little bit more from this morning. Customers are saying, I need to consider my electricity usage patterns when determining what's the right option for me.

And I'm going to have to look at what changes do I need to make in my lifestyle or maybe in my business priorities in relation to having an effect on my bill.

And as everybody's been saying, I need to see some financial savings. And that's going to be a big driver in what is the right rate choice for me.

There's some perceived limitations around the ability to shift usage during a peak

event, especially for business customers. They're concerned about impacting their own customers in terms of comfort. And they're also concerned about changing my business operations in order to reduce my load.

Residential customers, what we saw was when I didn't have a whole lot of experience I wasn't really sure how to constantly reduce my A/C load. And it was kind of easy for me to turn off lights, but to constantly go back and continually think about my A/C load was not as easy for me to do.

But, once they got experience customers said, you know, it wasn't that difficult for me to respond to the pricing.

They did say I need a plan that I can understand. This is going to be one of our biggest challenges with demand response is getting something that is understandable for customers, and easy to use because this is a complex issue for a lot of customers.

SMB customers want energy efficiency information and help me figure out how these two go together. And we also heard customers say I want to help the environment and my community when

this demand is high. So the societal and the environmental impacts do have a factor in their decision.

So when you looked at the medium to large business demand response research that we've done, what we're seeing is business customers aren't sure they can shed load due to the demands of their business. And this is a constant challenge that we have with a lot of our customers.

And they need to be able to show some kind of financial analysis to their management that demonstrates the bill savings to offset the changes they're going to have to make in their operations to respond to a peak event.

There's concern that curtailments may cost more in missed production and overtime than what they may receive in savings and incentives. And they are unwilling to impact their own commitments to their customers, their tenants and their employees in terms of comfort and safety.

They also are concerned about not having enough time prior to an event to make the adjustments that are needed. And they're very concerned about participating if they don't

already know they can reduce load, because they don't want to get penalized for it.

And finally, what we're hearing is I need some flexibility. A lot of what I've seen so far kind of is a cookie-cutter, and I need something that allows me to choose different components of a demand response program, whether it's the load reduction amount. When can you call a peak event on me; how long is the peak event; and how much advanced notification do I need.

Talking a little bit to our small business and residential customers. What they are saying is I'd like to see a bill guarantee or bill protection, so that what I'm going to be paying during my first summer would not be higher than what I currently am on.

And I am going to have to make a change in my electricity usage in order to take advantage of a critical peak pricing rate.

And some of our SMB customers say, again, they're kind of split. Some feel like, yeah, it wouldn't be too difficult to make some changes. Others feel like, yeah, it is going to be a little difficult for me.

What we are also seeing is impacts on

the bill is driving them to look at their meter data. So that is one aspect that they need to understand real clearly. They want choice. They want options. I need a little bit more flexibility to determine what's the right thing for me.

And what we also again heard from residential customers is they want to help their community when the demand is high.

So when you take some of these challenges and overlay it across this education process, these are some of the things that we are going to have to address as we move forward with educating our customers.

When we're looking at making them aware, we've got to help them understand the context. Why is this important; why is this happening; what can they do. What do I need to do to be involved. Engagement is how can I do this; what do I need to do; what do I do based upon these different prices that I'm seeing; what are the different options that are available to me. How do I use all of this meter data, and what does this mean. And how do I make sense of that information.

And then, how do I make sure my

employees, my family, they understand if we're going to do this, what are the impacts that are going be on them.

And then when you get to the adapting and they've chosen, now how do I make sure everybody kind of knows what they need to do; what's that plan that we need to put into place if an event occurs. How do I get the information and look at my interval data such that I know what's going on. And if I make an adjustment here, what's the impact on my usage, and how do I understand what those different tradeoffs are.

And then what are the consequences if I'm not able to do what I would like to do.

And finally, once you're adopting and it's ingrained, you're starting to look at how deeply and in what manner has this affected me. How much am I changing things and what's the impact. Is it well ingrained at my business or in my home of, gee, we're doing things differently than we did before we got all this demand response plan.

And ultimately then, what's the benefit to me. What is the benefit to my bottomline; what are the other benefits, whether it's environmental

or societal, that I feel like this is getting me.

So, different ways that we could address these challenges. There's a lot of communications that's going to have to occur just to get a level of awareness available and out there to customers.

And you have to insure that your internal staff is trained to be able to answer the different questions that customers are going to have around just help me understand what this demand response means.

Then when you start actively soliciting and really talking to customers around this is the right thing for you, these are the things you need to be looking at. And here's the technology and the infrastructure that is out there and available to you to help you make some decisions around what may be the right things.

Looking at their interval data. A lot of customers have very little exposure to interval data. And helping them understand, here's how you use the data, here's different ways you can look at different rate analysis and different energy management and decision tools.

And the different rate options that could potentially be available to them to help

them determine what's the right thing for me.

Then once they've chosen, you need a lot of online and offline tools to help them understand what's going on and how am I using energy; and what if I made this change here, what is the impact. A lot of education, ongoing, reinforcement of helping them understand what can you do, what other things can you do. Other customers have done this, have you thought about doing this.

There's tremendous -- this is an ongoing communication. This is not a one-time sign-up and it's over. This is truly an ongoing communication. An ongoing relationship, and an ongoing behavior change.

And you're doing ongoing assistance and advice. And have you thought about this. And look at this. And you're giving them tools to let them do what-if scenarios; and gee, if I made this change here, what's going to happen.

And then you're looking at your billing information to make sure you understand the different rate components. And what's the impact on my bill. And you're leveraging other programs like energy efficiency, and putting those two

together and helping them understand how you can continually get better.

So what are the different strategies to address some of these challenges. For our medium to large business, again they need sufficient time to understand and engage them on tools, data and technology. Again, this is a complex issue, even for the large guys. And they need to be really looking at the implications on their business.

They have to be provided a voluntary and educated choice of environmental and financial options that are understandable and easy to use, as well as providing access to their energy consumption.

A lot of collateral for their account managers, because the account managers are going to be basically working very closely with these customers to help them understand what are the right options for them.

a lot of energy audits need to be conducted to help them understand where can I make improvements to my business to be more efficient in what I'm doing.

And looking at decision and energy management tools that give them the ability to

evaluate their usage behavior on an ongoing basis. And allows customers the ability to tailor demand response options to meet their personal requirements and needs.

Look at ways to help them reduce or shift their energy usage and provide detailed information so that customers can determine how their changed behavior has impacted their bill.

One thing we have just recently introduced a couple of weeks ago is our PeakChoice demand response program to our large commercial customers. This allows customers to create a semi-customized demand response program to meet their personal requirements and needs.

So the participants can tailor the program based upon how much of a reduction amount and commitment level they want to do. So, how many kilowatt hours do I think I can reduce, and do I want to make this more of a best effort versus a truly committing to this amount.

How many hours do I want to commit to a peak event. How much lead time do I need prior to a peak event. What time of day can the event occur. What's the maximum number of events that I feel like I can participate in. And how many

number of consecutive-day events can I participate in.

And we're working with customers to kind of help them understand what is that combination that's kind of specific for that particular customer.

So, for our small to medium business and residential, these guys, even more than the larger guys, they need a lot of time to help them understand what their options are and the tools and the data, and the technology. There's a much longer learning curve for these guys. And to help them understand what are their options and how can they manage their energy usage.

They also need to be provided with a voluntary and educated choice of environmental and financial options that are understandable and easy to use. A lot of educational materials.

Whereas we can't do one-on-one consultation with these guys, we're going to have to be real creative in figuring out how can we do some mass customization for these customers, to help them understand how this works, and what are the implications on them.

Again, conduct energy audits to help

them assess their options; provide them with decision and energy management tools that give them the ability to evaluate their usage, like a lot of these inhome displays, I think, are going to be very important to these customers.

Conduct a lot of workshops and educational efforts to help them with the information on how to shift and reduce their usage, and how to use the different tools. They're going to need a lot more guidance and hand-holding.

And, again, help them understand how all this detailed information impacts them, and what does it mean, and how do I use this.

Provide them with bill protection as they adapt their behavior so that they can kind of get a sense of if I make these changes what are the impacts. And if I don't happen to make that change, am I going to get -- I won't get severely penalized for it.

Also provide them with enabling technology options like what we are currently doing with some of our smart A/c capabilities. And also we've got to do a lot of customer research with this group, especially, to help

shape the development of some future third-party inhome technology like some of the smart home automation pieces.

So what we have just recently introduced to our residential and small business customers, late May is our SmartRate program. And this is a voluntary electric pricing program that encourages customers to shift or reduce their electric usage during the summer months.

And right now we're doing a small rollout in Kern County for those customers who already have a smart meter, electric meter that's been installed, and we're already remotely billing and reading their meter.

Just to give you a little background on what that is, it's the events can occur on no more than 15 nonholiday weekdays during May through October. They get a surcharge that is applied when a smart day event occurs, which could be 2:00 to 7:00 p.m. for residential, or 2:00 to 6:00 for commercial.

They get a slightly reduced rate for all the other summer hours outside of a smart day event. They do get bill protection during the first full summer. And we are currently

conducting a lot of workshops down in Bakersfield and in Kern County to help them understand how to use the tools, how to shift and reduce their usage, providing them with information on things that maybe they haven't thought about. Making sure they understand the implications of the rate.

And we now add these folks they're online capabilities to look at their daily and hourly energy usage information. We just rolled this out late May. We're very excited in that we've gotten 10,000 residential and small business customers that have enrolled in the program out of 140,000 eligible customers. So, very early on both of these two rates, but we are very optimistic about both of them.

Any questions?

PRESIDING MEMBER PFANNENSTIEL: Several. Thank you very much. Really, a very good overview.

I'm a little concerned that there seems to be a sense on the part of customers, residential as well as business customers, that this sort of peak pricing is somehow a penalty. That the peak rate is a penalty to them.

And in some programs, I guess, it's

explicitly called a penalty. And there doesn't seem to be any concept or any understanding that, in fact, there's a cost justification for having a higher price onpeak, and that a lot of this stuff flows therefrom.

So, if you're paying a higher price at peak it's because you're imposing higher costs on the system in a fairly generic way.

Is that something that's part of your basic education program?

MS. STABLEIN: I feel like that is something certainly going forward we're going to need to be looking at much much greater attention --

PRESIDING MEMBER PFANNENSTIEL: But there still is, and then there's the sense that well, these programs are voluntary and so you have to hold customers harmless from having any bill impacts.

And yet, on the other hand, those who have loads such that their usage is onpeak, perhaps are imposing higher costs, and maybe they should not be held harmless.

So do you see this idea of holding customers harmless, or bill protection being a

transition? Or is this something that's going to be built in?

MS. STABLEIN: That's a good question. We're still assessing that. I think that we will probably need to do more research and more analysis around that.

PRESIDING MEMBER PFANNENSTIEL: Your PeakChoice --

ASSOCIATE MEMBER ROSENFELD: Can I just emphasize, I'm backing you up. We saw this morning, but I think not from PG&E, at least two plots of rates. And somebody showed 11 cent line, showed that in nine time periods out of ten the rates were cheaper.

And it's not up to me to be giving you advice, but it seems to me that the only way to get that across is with a picture. That that picture is very important, that most of the time you're saving money.

PRESIDING MEMBER PFANNENSTIEL: But even if you're not saving money, it's because your load is such that --

ASSOCIATE MEMBER ROSENFELD: There's a --

PRESIDING MEMBER PFANNENSTIEL: And

looking at your PeakChoice program, which I sort of like, a lot of choices and options, it seems to me sort of modeled on a cellphone plan, pricing plan. Was that kind of in your mind that it's like when you sign up for a cellphone plan, you can pick the one that seems to fit you best?

MS. STABLEIN: I don't know if it was necessarily done on a cellphone plan. It was more we sat down and talked with a lot of our customers and, based upon some of the constraints they felt they had with, and challenges they had, with demand response, we were trying to build a program that would allow them some of that flexibility.

PRESIDING MEMBER PFANNENSTIEL: So the flexibility, though, for each of the customers should be -- I assume each customer would design a plan that will allow them to either reduce their rates or certainly not increase their rates.

MS. STABLEIN: Again, I think it's more on a customer-by-customer basis. It depends on what's important to them.

PRESIDING MEMBER PFANNENSTIEL: Right. And so probably what's important to them is to reduce their electric bills.

MS. STABLEIN: That probably is one of

them, but that may not be the only reason. There may be some environmental impacts that they're also looking at. But certainly price is factored into it, no question.

PRESIDING MEMBER PFANNENSTIEL: So I just want to -- I'm looking for some comfort that those customers who are saving money aren't doing so by imposing additional costs onto other customers. You're not shifting costs from these customers who have designed a rate that's their current load profile without them making any changes, perhaps, and then imposing the costs onto other customers.

So I just think in a rate design sense that becomes, you know, the key point.

MS. STABLEIN: And I think we're certainly going to be -- we just rolled these things out. We're going to be looking at that to a much greater extent as we go forward.

PRESIDING MEMBER PFANNENSTIEL: And the SmartRate, voluntary rate for the customers with the smart meters, is that a basic baseline rate, inverted tier rate with some discounts to it? Or is it an actual time-varying time-based rate?

MS. STABLEIN: Basically it is an

overlay to our current A-1 type rates for residential. And we just do the surcharges and the credits on top of it.

PRESIDING MEMBER PFANNENSTIEL: And why did you do that? Why did you, since it's voluntary and you could avoid AB-1X problems, why didn't you just go to a time-varying rate?

MS. STABLEIN: I don't have that answer.

PRESIDING MEMBER PFANNENSTIEL: Okay. Other questions?

MR. TUTT: I have a couple. On the PeakChoice and the SmartRate programs, how do you market that to your customers?

MS. STABLEIN: For PeakChoice we are basically doing a lot of direct mail, and then follow up with account managers, who are sitting down and doing one-on-one discussions with those customers.

For SmartRate, we did a lot of direct mail solicitation, email. And then those that were interested were now doing all these workshops to help them understand what are the implications.

MR. TUTT: Okay, --

ASSOCIATE MEMBER ROSENFELD: Tim, can I ask one more right on that?

I think you said that on your SmartRate you had 10,000 customers signed up out of, quote, 100,000 eligible; 100,000 eligible or 100,000 you mailed out to?

MS. STABLEIN: Well, basically eligible meaning that we mailed out to all that was eligible, so these were customers --

ASSOCIATE MEMBER ROSENFELD: Oh, okay. It's the same number.

MS. STABLEIN: Exactly. Those were all the customers that are right now, in Kern County, that are being remotely meter read and billed from our customers. So it's moving every month.

ASSOCIATE MEMBER ROSENFELD: So you got a 10 percent response.

MS. STABLEIN: A little bit under 10.

MR. TUTT: Those are the customers that already have the smart meters installed?

MS. STABLEIN: Correct. You have to have a smart meter in order to take advantage of SmartRate.

MR. TUTT: I don't believe you talked about this, but PG&E's demand response program where the customers have a choice of installing an air conditioner cycling switch or a PCT, --

MS. STABLEIN: Um-hum.

MR. TUTT: -- is there a marketing effort getting customers to choose one or other of those options?

MS. STABLEIN: Right now that's our smart A/C program. We are basically giving customers a choice of whether they want to do a switch on their air conditioning system or a PCT. And we're certainly looking at, again have not done a whole lot of analysis on it yet. We're still marketing it pretty substantially.

We're going to start looking at some of those details and looking at what those customers look like.

PRESIDING MEMBER PFANNENSTIEL: All right. Is PG&E planning to develop more rates for the smart metered customers than the SmartRate? It's of great concern to me if we're going to stick with all of the problems on the current rate structure.

MS. STABLEIN: Absolutely, we're looking at different rate options.

PRESIDING MEMBER PFANNENSTIEL: But this is the only one that's out there right now; this is your first --

MS. STABLEIN: Correct.

PRESIDING MEMBER PFANNENSTIEL: -- rollout?

MS. STABLEIN: Um-hum. And, again, we're doing the small test because we want to learn. We want to learn what's working, what's not working.

PRESIDING MEMBER PFANNENSTIEL: Well, if you 100,000 eligible customers, 10 percent response rate at this point, that's not too small.

MS. STABLEIN: No.

PRESIDING MEMBER PFANNENSTIEL: And so I'm just concerned, I guess, that this is the only thing out there for those customers who have all of that opportunity to learn a lot about their usage and usage patterns. And it seems like sort of an opportunity foregone if they are just stuck with an inverted rate structure.

Anything else?

ASSOCIATE MEMBER ROSENFELD: Yeah. I realize that I wasn't paying as much attention as I should. On your SmartRate there are two issues; there's the critical peak day, the really hot days, and then there's not a holiday weekday afternoons.

And SMUD had both, I guess. You have both in your rate?

MS. STABLEIN: We basically have a up to 15 smart day event days --

ASSOCIATE MEMBER ROSENFELD: Right.

MS. STABLEIN: -- where surcharge could be charged. And that would be between May through October. And then between June through September we give a discounted rate for all those other hours.

ASSOCIATE MEMBER ROSENFELD: But on critical day?

MS. STABLEIN: Right.

PRESIDING MEMBER PFANNENSTIEL: You have a bump in the price in the afternoon from 12:00 to 6:00?

MS. STABLEIN: No. They get -- anything that is a non smart day event day during June through September, they get that discounted rate.

So, --

PRESIDING MEMBER PFANNENSTIEL: So you get a discount in the summer?

ASSOCIATE MEMBER ROSENFELD: Yeah.

PRESIDING MEMBER PFANNENSTIEL: That doesn't sound like all the time.

MS. STABLEIN: On a non smart day event.

PRESIDING MEMBER PFANNENSTIEL: For all summer hours outside of the event, you get a discount, a summer discount?

MS. STABLEIN: A small discount, yes.

PRESIDING MEMBER PFANNENSTIEL: It seems like you're giving reverse price signals then relative to overall customer usage. It seems like you would be wanting these customers to not be increasing their usage, you have lower prices increase.

MS. STABLEIN: I will say that we're trying to get people to start understanding this whole demand response piece. And we're certainly looking at all of that information.

PRESIDING MEMBER PFANNENSTIEL: David, did you -- I'm sorry.

ASSOCIATE MEMBER ROSENFELD: I just want to warn you, though, there is -- you're doing an experiment on what seems to me to be a slightly unrealistic approach.

That is, you weren't here for the other workshops, but Commissioner Chong was very firm about the fact that the prices which, the tariffs which they're going to require come 2010, what she

calls critical peak pricing, is not only critical peak pricing on like ten hot days, but it's time-of-use pricing every afternoon.

And, of course, it's the every afternoon where you're going to save energy, as opposed to response --

MS. STABLEIN: I'm going to let Susan McNicoll, who's a little bit closer to the rate design than I am, I'm going to let her speak.

MS. McNICOLL: Yeah, the SmartRate tariff is an overlay on both standard and TOU.

ASSOCIATE MEMBER ROSENFELD: Oh, it is?

MS. McNICOLL: Yeah, we offered it. We just don't have any customers on TOU eligible right now, but anybody, they can choose either way, standard or TOU.

I understand that does not address the Commission's concern, but that's the way we designed it in order to offer the greatest options.

We also have a peak time rebate out there that we're proposing, too. So, we're not saying that these are stuck. These are starting propositions that we would assume would evolve over time.

PRESIDING MEMBER PFANNENSTIEL: And, David, did you have a question?

MR. HUNGERFORD: I'm going to shift to a slightly different topic. I wanted to talk a little bit about audits.

And we've talked earlier today about the idea of customers needing hand-holding for various aspects of learning how to respond, either through the development of shed strategies for larger customers that have complicated systems. And even to help programming thermostats for small customers.

And I note you mention energy audits for all three levels of customers. And I wondered, for small customers, it's sort of conventional wisdom that energy audits for a residential customer are pretty much too expensive to be justified on a cost effectiveness basis.

What kind of audits have you been thinking about for small customers? I would agree that they're necessary. The question is what are you thinking about in terms of costs or what kind of level of support for small customers?

MS. STABLEIN: I will say initially it's going to be a lot of online energy audits that

allows them to go in and download their usage data, and looking at some averages and helping them understand what some of the implications are.

But, I totally agree with you. There's some cost implications, and certainly looking at where is that dividing line, at what level of customer.

MR. HUNGERFORD: My initial reaction to that is that it's a little bit problematic, as the first speaker today pointed out, individual usage varies greatly. And the online audit tools, at least the ones that I've played with, tend to make assumptions, averaging assumptions, about individual behaviors.

So, it's very hard for an individual to go on and say what's wrong with my usage. Susan's going to address that --

MS. STABLEIN: And, again, that's -- it is today, I totally agree. What we're going to be doing as we get more technology and you get this interval data and the more real-time feedback using these different inhome display devices, you're going to be getting more of that real-time feedback.

But today --

MR. HUNGERFORD: That's what I --

MS. STABLEIN: I'm sorry. Today we are limited by just some technology constraints at this point in time.

MR. HUNGERFORD: All right, thanks.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much, Jodi.

MR. TAYLOR: We're going to move directly to Mark Gaines from San Diego Gas and Electric.

MR. GAINES: Good afternoon, Commissioners, pleasure to be here this afternoon. I think it's timely to have this discussion. We're in the middle of first run of installing our smart meters in our service territory, 5000 units, as a test installation.

And we started our critical peak pricing rate default for large customers this summer. And we're in the midst of working out our plans for peak time rebates. So I'm going to spend most of the time talking about those activities on peak time rebate, but certainly can answer questions to the other issues.

Starting from the beginning, our perspective, what we see the value of smart

meters, as has been demonstrated here today, is information. It creates the opportunity for us to provide more direct feedback to the customers on their usage, whether that's through audits or other feedback methodology.

It allows us to understand the customers better so we can better target the market, who is using the energy; when they're using it. And provide solutions for them.

And allows us to offer rates that provide appropriate cost to the customers, send the right price signals to them. And the rates that we're looking at currently are peak-time rebates for residential and small commercial customers up to 20 kilowatts. And then default to critical peak pricing for customers above that.

We'll be looking also at the drivers, motivations of customers to reduce their usage during these time periods. So we can try to maximize those motivations and provide the tools that help us to do that.

The approach we've taken to this point is trying to make sure we align our communications with the behaviors that we're expecting from the customers. And to do that we've started some

coproduction, codesign workshops with our customers. Actually they're online workshops where we involve up to 100 customers to help us work through the issues that we think are going to be presented to the customers.

We're using those throughout the full process of meter installation and utilization, so we've got the smart meter installation process we're evaluating, as well as the education topics that we think will be important for the customers, how we're going to present the information on the web; how we're going to notify them for the notification days; and the feedback they'll get at the end of that. And the motivation themes that might drive that information to them.

Looking at developing a portfolio of strategies including the price communications programs and other services that might help the customers with their response. We've conducted two co-design panels up to this point. One last year and one earlier this year.

Key findings. On the presentation for education, obviously the access to individual data is going to be valuable to the customers to help them understand their specific usage and how the

rates are going to impact them.

We've also found that it allows the customers to define a goal. Getting back to what gets measured, gets accomplished, we've found that customers that are allowed to set their goal, be able to track that goal are more likely -- or at least they believe they're more likely to achieve that goal.

We also got feedback on how we display the tier rates. As discussed here earlier, the current rate design structure for residential is a bit complicated. So how best to display that to them is a challenge. And utilizing this feedback gave us some idea on how we might do that and a later slide will show that.

Another thing they asked for was a variety of comparisons. That they would like not only their own usage that they can compare last month, yesterday, last year, but also other users of similar situations, homes of similar size, located in similar climate zones.

And they also asked for notification on their bill and their impacts beyond just that specific critical peak period. One would be to notify them when their bill gets to a certain

level by data electronic feedback and notifying them when they get to a specific tier in the rates.

It was interesting, one thing we found in the codesign panels was they certainly knew how to follow the money. What they figured out quickly was they could save a lot more if they focused on their usage patterns throughout the month, rather than just specifically on critical peak days.

So that was one reason they looked at displaying the tier rates rather than focusing necessarily on their peak time rebate response. And also the last one of getting notification. So something that influences their behavior on a continuous basis rather than on a periodic basis. They found, and recognized appropriately, it would save them a lot more money.

And what we're looking at, the peak-time rebate, it's probably $1 to maybe $5 a day for customers that respond versus obviously 10, 20 percent reductions in overall bill throughout the month.

PRESIDING MEMBER PFANNENSTIEL: Mark, I'm sorry to interrupt, but that question about,

or that statement you made about customers know how to follow the money, does any of this assume that there's any inhome display that would track their costs? Either on a cumulative basis or marginal basis?

MR. GAINES: Not necessarily inhome display; that's certainly an option. What we're currently looking at is to have a web-based display that would be updated on a daily basis. There is technology to do it on an instantaneous basis inside the home, and that would certainly be an option for the customer.

Some indication we've had in the past is that it's a toy that people play with for a month or so, and never look at again. It's kind of expensive --

PRESIDING MEMBER PFANNENSTIEL: Well, what concerns me is if they know that they've gone into tier three, and so they're paying -- what is your tier three price per kilowatt hour?

MR. GAINES: It's 14 cents, somewhere in that range.

PRESIDING MEMBER PFANNENSTIEL: And they're, you know, 18 days into their billing cycle. There's nothing they can do about it.

They've got to use something, whatever the price is, for the rest of the month.

Whereas, if they had some inhome display that's showing them their marginal price at any given point, you know, they move to a time-varying price, for example. They have a lot more options.

But really, they need a way of getting at that.

ASSOCIATE MEMBER ROSENFELD: Put very explicitly, it wouldn't be very difficult to design -- to extrapolate to the end of the month.

MR. GAINES: Right.

ASSOCIATE MEMBER ROSENFELD: And tell you, you know, gee, it's only day 11 and you're already headed for a big bill.

MR. GAINES: Yeah. Two ways to address that, I think. At the bottom of this page you'll notice get notification. So we can certainly set up a notification that would tell them on a daily basis what their usage is on costs.

So then they can know and react accordingly. And we think it's probably much more valuable to the customer to push the information out to them, rather than to pull them to our website.

So we're looking at ways to do that electronically. And they would set up what kind of alerts they want; whether it's at a certain dollar amount, tell me when I've exceeded that. Tell me on a daily basis. Tell me on a weekly basis what I've used. Various ways that they could design their own feedback.

But pushing it out, the information, that way, I think, is going to be more effective in the long run.

But assuming they want to go to the website, here's a design that the codesign panel actually came up with. And, again, it focuses on their monthly usage moreso than their daily usage.

But there's several types of information that shows here. On the left-hand side is the various tiers. And along the bottom axis is the days of the month. So it shows what their actual usage is --

MR. TUTT: Mark, I had no idea your rates were so low.

MR. GAINES: Yeah, well, we wish they were at this point. I don't know who designed these numbers, but anyway, it shows their actual usage as they go through the month. And then

projection, if they continue that usage through the rest of the month, where they would be.

So it does give them that feedback on what their final monthly bill would be, and they can react accordingly.

It also shows along the bottom what their daily usage is on a bar graph comparison. Up on the top left they can toggle this between this month or last month or other comparisons of it. And on the bottom right they can toggle between dollars and kilowatt hour, whatever makes the most sense for them.

So, the codesign panel came up with this as a good information feedback for the customer, but again it would require them to come to the website for this kind of detail. And I think pushing the information out in other forms would probably be more valuable to them.

So what motivates the customers. You heard some indications earlier today that money was probably the biggest motivator. Again, following the money for this codesign panel, they realized that demand response rewards are not significant, at least under the current rate design.

So that would not be the primary motivator. What we found from our codesign panels was the most resident driver for customers, most important motivator was pride. It's good for the community, good for you, good for the environment. And setting up a message along those lines would create the greatest results.

Certainly financial return on gain is important, but recognizing we're not going to be able to create that environment with our current rate structure. We don't want to disappoint the customers and lead them to believe that they're going to save a lot of money. And then have them disappointed and not want to participate.

We think it's better to follow along the idea, and I would make an analogy to recycling activity in California. People don't make a lot of money off of recycling, but they feel that it's a community value, an expectation that we all need to participate in. And I think that's how we need to position critical peak pricing and demand response activities.

Another motivator that motivated some was fear. This is more on the outages, which I think historically has been the way that summer

peak periods have been marketed from the energy crisis. That we need to use them to avoid outages. So a fear motivation.

In my mind that's not a sustainable message. It kind of asks the question, why can't you guys get your act together and plan better. Why do we have outages every year. There are threats of outages every year. I think you need to redesign the message.

And I think that is consistent with the state's efforts under the loading order where energy efficiency and demand response are first in the loading order from an environmental perspective. It's consistent with the community good, environmental benefit.

And then with MRTU coming in, it's going to be more price-based and avoiding stage alerts all together by having demand response included in the resource order early.

So the messages from the state are consistent with presenting it more as a community good and a price, rather than a prevention of outages.

The least impact for motivator was imitation. Competing with a neighbor. Saying,

I'm going to do it better than them was not very valuable.

ASSOCIATE MEMBER ROSENFELD: What do you mean was not very valuable? How do you measure that?

MR. GAINES: Well, just the feedback from the customers of whether they would react and change their behavior because they thought their neighbors were doing it. And trying to compete versus a neighbor that I can reduce my load more than you. That was not very impactful to them.

It was more if it was the community, if they felt the entire community was reacting and they were involved for that benefit that was much more motivational,

ASSOCIATE MEMBER ROSENFELD: Sure.

MR. GAINES: -- rather than saying, let me, just give me a comparison against my neighbor.

How they wanted to be --

ASSOCIATE MEMBER ROSENFELD: Oh, Mark, Mark --

MR. GAINES: Yes.

ASSOCIATE MEMBER ROSENFELD: Before you go too far, can you go back to the slide with the rates, the one where I can't see the sloping line.

On that one did you say that there is some way to show them, however, what comparable customers have in the way of electric intensity? You mentioned something about comparing with their neighbors.

MR. GAINES: Yes, I think it was back here. It is valuable, I think, to present them information in terms of how are they using energy versus similarly situated neighbors. So they can tell and we can tell who is the high energy users. And then maybe that would raise the question of why am I a higher energy user. Is it my behavior, is it my equipment, or is there some other factor that's causing that.

So, we do see value in doing that in a comparison in determining who should be the target market and why. But not on an ongoing basis just to compete one neighbor against another.

ASSOCIATE MEMBER ROSENFELD: But just to pursue this a little bit further. You had a toggle switch with which you said you could look at your usage in kilowatt hours or in dollars, for example.

MR. GAINES: Right.

ASSOCIATE MEMBER ROSENFELD: I'm

thinking it would be fascinating if you had another toggle switch which shows you two lines. One is your intensity, I say intensity because I'm going to correct it per square foot --

MR. GAINES: Okay.

ASSOCIATE MEMBER ROSENFELD: -- and the other would be old customers in your zip code with a similar vintage house or a small business.

I would think if you knew that you were in the worst 10 percent or something you would feel much more confident that you could do something about it.

MR. GAINES: Yeah, that's certainly a good suggestion. We would have the data to be able to do that.

ASSOCIATE MEMBER ROSENFELD: Good.

MR. GAINES: Okay, feedback we got on rebate notification. Their preference, not surprisingly, is to do it electronically, either email, text or voice. And the customer could choose that.

They also asked for the ability to enroll other members of the family so there would be multiple ways to notify multiple individuals. And it's certainly enough to do; they can give us

multiple email addresses or phone numbers to call.

PRESIDING MEMBER PFANNENSTIEL: They want you to send text messages to their teenagers.

MR. GAINES: That's the only way to reach them.

Not surprisingly, the message needs to be simple and pragmatic and to the point. Obviously they don't want long messages; they just want something clear. Now's the time to react, we've got a peak day tomorrow.

And then wanting feedback the very next day on how well they did to reinforce that activity. And, again, that would be from a push method. We could certainly display it on the website. We think it much more valuable to set it up in some sort of an email, text message, voice message back that tells them how they did.

And I think being consistent with the motivation of a community good, we would look to include how well the community did. Not only how they did on an end-user basis, but how well the community did overall in terms of reaction.

Here's again the codesign output of what they'd like to see on a feedback. This would be more likely presented on the web, but may be in an

email message, also.

The white bar shows the reference usage, which is the highest three out of the last five days for PTR. The blue is the actual usage that they would have, that they had during the peak day. And then their savings is the difference between the two, and that's the green bar, 2 kilowatts, and the highly motivational smiley face also helps.

(Laughter.)

MR. GAINES: So this is a graphical representation of their savings. And, again, reinforces that short-term feedback on how well they did will keep them involved in the program on an ongoing basis.

So, overall, a series of events needs to take place to have an effective PTR program. We believe first is the length of the information notification has to clearly align itself with the programs.

We have to deal with that issue. We've got flex alert that we've been using here in the state for awhile. As we move into peak time rebate, programs within the various utilities and other CPP-related events, we're going to, I think,

get some confusion there. We need to address that issue, and how we move to a notification that is consistent with whatever rates are available in the service territories.

Once that's established, we have the information from customers. They can put in who and when and how they want to be notified of events. That notification could come in, in this case, through a cellphone in a text message. Feedback after the fact of what they did, and then their rewards come on their bill.

We've also toyed with the idea of the rewards, again building off the community benefit, is the rewards would not necessarily come on their bill, but they could offer up a charity that they would rather that money go to.

Again, trying to leverage the value of that money, because it's not going to be a huge amount. But if they can feel it's more valuable to send it to a charity, make them feel better about the actions that they took, then that might be a good motivator for them.

Future research activity for us. We need to figure out how to explain PeakTime rebate to the customers. And how best to respond to it.

We've got 1.2 million in our service territory. The other utilities have far more.

And it's certainly changing the message that we're giving them from the utility. It can be very complicated and confusing, and trying to explain that to that number of people is a difficult challenge.

We found implementing our default CPP rate to customers above 200 kilowatts this summer, which you'd think would be very knowledgeable customers, and they were aware that the rate was coming. It took, on average, an hour of a sit-down meeting with our account execs with each of those customers to explain the rate, get them comfortable with what choices they had and which was the best choice for them.

Obviously we can't repeat that with our smaller customers, or we'd go broke. So we've got to find other ways to explain these rates to customers and get the message out there in a simplified fashion.

We're going to look more deeply into the motivation, refine that so that we can maximize that activity. We are certainly going to be doing continual test and learn as we roll out the meters

in the service territory with this first 5000 test, and as the others come in, in about nine months.

And then we're going to look at the name for PeakTime rebate. That was just something that was chosen in a conference room while we were developing our demand -- or our smart meter program. I don't think it's necessarily the best one to roll out to the customers from a marketing perspective. So we need to look at how we change that name and come up with something meaningful.

So those are the activities we'll be doing over the next nine to 12 months. The first, PeakTime rebate is expected, impacts are expected to occur in the summer of 2010. So we've got a little bit of time to work on this. But we certainly have some challenges ahead of us.

That's it, thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Mark. Very good. The PeakTime rebate program sounds like sort of a feel-good program. Doesn't save a lot of money; gives people little information; gives them something they can do with the billing -- the meter information from these smart meters.

Are you planning -- it's a voluntary program, is it not?

MR. GAINES: Well, since there's no penalty everyone is automatically enrolled.

PRESIDING MEMBER PFANNENSTIEL: Okay.

MR. GAINES: So, --

ASSOCIATE MEMBER ROSENFELD: Well, put more precisely, since the penalty falls uniformly on participants and nonparticipants --

MR. GAINES: That's true.

ASSOCIATE MEMBER ROSENFELD: -- people will go for the benefits.

PRESIDING MEMBER PFANNENSTIEL: Well, but as a voluntary program, or let me put it another way -- are you considering offering voluntary programs that are somewhat more meaningful in terms of the price response that you can engender from, you know, time-of-use, time-varying rates.

Again voluntary programs we understand to be outside of the scope of AB-1X. And so all of the problems we're having with trying to design AB-1X programs would be able to be avoided if you do really meaningful time-varying voluntary programs. Is that anticipated?

MR. GAINES: We've discussed that on numerous occasions inhouse, and have a couple of concerns with it. The biggest one is, and you mentioned it, I think, earlier when we were talking about the rates, is if you set up a rate like that, given the current rate structure, and you give that alternative out there, there's going to be -- I don't know what the percentage is, but 10 to 20 percent of the customers that will save a significant amount of money by just shifting to that rate and not taking any action.

So we worry about the message that that sends; the cross-subsidy that occurs because of it.

Certainly our instate, our preferred outcome is to have all customers on CPP rates. And as we get clarity on AB-1X rolloff, we are moving in that direction. Whether we come up with a rate in between for voluntary, at this point we have no plans for that.

But, we'll certainly be watching the marketplace. But our concern is just, as I mentioned, that the only customers that would take advantage of it are the ones that would save anyways. And --

PRESIDING MEMBER PFANNENSTIEL: Well, isn't PeakTime rebate sort of the same kind of not really doing anything except helping customers feel good about, you know, using some information, even though it's not an essentially meaningful reduction in their bill?

MR. GAINES: It sends an economic signal. Certainly not as strong as it could be. But it sends an economic signal for the right message to the customers to change the behavior. And we think that if it's presented properly on a community-wide basis you can get meaningful results from it. Even though individually the customers may not save significantly.

Although some will. There is certainly a broad range of reactions from customers. And the data indicates that there will be a small percentage, probably 15 to 20 percent of the customers, that could save substantially on their bill. The majority of customers would not.

But, we think it can be a very effective program. It's a good transition program to teach the customers about the value of reducing their usage during peak hours. And move residential customers, probably in a gradual way, towards

critical peak pricing at some point in the future.

PRESIDING MEMBER PFANNENSTIEL: But a time-varying rate, properly designed to reflect cost, would also provide price signals and educate customers. So, even if it's self-selected, so only those customers who don't have to necessarily shift usage or able to shift usage take advantage of it, I don't see that that's harmful in any way.

It seems like that's, in fact, more educatable -- gives better education signals than something that is, frankly, sort of the old-time rate design with something superimposed on it.

So, I'm just sort of surprised that you're not moving towards more efficient rate designs that customers, in fact, will want to take advantage of. But I see that that's maybe some day in the future, but not --

MR. GAINES: Yeah, we --

PRESIDING MEMBER PFANNENSTIEL: -- not that --

MR. GAINES: -- we're in complete agreement, that's the instate. How you get there, whether you use a voluntary participation over the short run, at this point we're not planning on that. But it's certainly something that we'll be

watching to see if there is value to that in the interim.

ASSOCIATE MEMBER ROSENFELD: Yeah, my reaction is about the same as Commissioner Pfannenstiel. I would beat up on you more that it's not -- that time-of-use is a very important thing every afternoon. But as long as you keep saying transitional, transitional, transitional, I guess you can ward us off.

PRESIDING MEMBER PFANNENSTIEL: Not I. Other questions?

MR. TUTT: One slight question. On the data presentation prototype slide, the colorful chart. What were the yellow bars at the end of the daily, hourly or monthly usage?

Looks like there's a couple of yellow bars by those green bars.

MR. GAINES: Good question. I do not know.

MS. SPEAKER: That means they've gone into the next tier.

MR. GAINES: Oh, that's right, that's true, that's what it is. Yeah, they've moved into tier two during those last two days.

PRESIDING MEMBER PFANNENSTIEL: Yeah,

they're at tier two.

MR. GAINES: So it matches the colors up above.

MR. TUTT: Thank you.

MR. GAINES: Thank you very much.

PRESIDING MEMBER PFANNENSTIEL: Thanks, Mark.

MR. TAYLOR: Next I'd like to welcome Seth Kiner from Southern California Edison.

MR. KINER: Thank you very much, Commissioners, for giving me the opportunity to talk a little bit about how we are working to engage our customers in demand response. But more broadly, in terms of a more energy efficient lifestyle.

What I want to walk you through a little bit, I know we've had a lot of time today talking about customers perspective and the feedback that we've gotten from customers. What I'd like to do is just highlight a couple points which kind of layer onto what we've already heard. So, what we know from the customers' perspective.

Then I'd also like to tie what we're going to do back to the objectives that we're trying to accomplish. And then give you a quick

overview of our strategic approach as we move forward with various efforts, to talk about how we would engage our customers at a higher level than we have to date.

And finally I wanted to talk a little bit about so if we do this what do we think we're going to get out of it. What's our return on the investment. What's the benefit that will be derived.

So, let's begin by talking a little bit about our customers. And there's an interesting research study that was done by DYG. And in this study they pointed out that customers don't want a third job. And it's interesting to think about this, because my initial reaction was, well, what's their first and what's their second.

And what we found was the first job is their work. So whether they're a business or a residential customer, it's their work. Their second job is typically their family. And their third job is everything else that they have to worry about.

And what we have found as we've delved into this more with our customers is that energy management is a third job. Unless you're hired to

be an energy manager as your first job, they really don't view that as something that is necessarily appealing at the surface. And we'll talk a little bit more about how we can make it appealing and engage customers.

The second is that in our marketplace, and I would imagine throughout the State of California, that a combination of demographics, attitudes and communication styles drive preferences.

So, we're seeing a number of these types of factors really shifting in our service territory. Demographics, greater influx of not only ethnic customers, but we're seeing a real shift in economic.

We have a greater divide going on right now between the rich and poor. And we're, because of the economy, seeing more and more customers who used to be in the more well-off category now struggling to keep their house, their jobs and their lifestyle.

Attitudes are also changing. One of the biggest areas that we're seeing attitudes is in terms of their care and concern about energy. The use of energy and also the impact that it has on

their lifestyle and the security.

We're also seeing attitude shifting in terms of care for the environment. And I'll talk a little bit more about that.

Communication styles is also a big factor. How customers want to do business with us directly relates to how they operate with other companies that they deal with. And so in order to engage our customers, we need to line up our channels so that customers can easily operate with us much in the same way they do as they conduct their everyday lives.

What we're also finding, and this is a very important factor for us, is that customers to not fully understand the rates. And carrying it one step further, they don't understand the link between what they use and what they pay.

As we've sat through focus groups and we've heard this, a lot of time customers equate this to, you know, going to the gas station. And they say, if I go to the gas station and I put 16 gallons of gas in my car, you know, I have to take out a home equity loan to pay the bill. But that first gallon of gas costs me exactly the same as that last gallon of gas. It just adds up and I

know how many gallons I put in, the price, and therefore what my bill is.

As you know, their bills don't work that way. They also don't understand the link between what they use and what they pay because they don't understand the rate structure.

And I had an experience very similar to this just a couple months ago. My bill is typically $40, I live kind of near the coast. We had a couple hot days. I got my bill and it doubled. And I'm usually like a tier two customer.

And I thought, wow, my bill's high, I want to go see why. And my usage didn't double, but the cost doubled because I had moved into a different tier.

And so, you know, thinking as a customer, because I did have to pay that bill, I was confused at first about well, why -- it doesn't make sense to me.

So, customers are really having a problem understanding their rates and the link. And the reason that I'm focusing on this is because this is a barrier to engaging customers as we move forward.

If they're not there and they're confused at this very beginning, any solutions that we provide them are relatively meaningless based on the feedback that we've gotten from customers, because they really don't understand the impact that that solution will have on what they pay.

We're also finding that more and more customers are riding the green wave. And this is one of our biggest attitudinal shifts that we've seen in our market. And they're doing it in a meaningful way. So, it's not a fad; it's not something, you know, that is cool to do now. This is really becoming lifestyle.

And what they're expecting from companies they do business with, including Southern California Edison, is that we provide them meaningful solutions so that they, too, can make an impact on the environment. Because energy is such a big important factor in terms of their contribution to sustainability.

And finally, what we're seeing is through our segmentation and our experiences that we have, is that as we look at demand side management, as we look at engaging our customers

in an energy efficient lifestyle, that a one-size-fits-all approach just doesn't work.

Just for your background, we've done extensive segmentation with our customers. Back in 2003 we looked at our residential customer base and we broke that market down into six personas, based on attitudes, demographics and usage, and a number of factors like communication preferences.

We --

ASSOCIATE MEMBER ROSENFELD: What year did you say you're talking about?

MR. KINER: We started this in 2003, and we keep updating and refreshing the segmentation. We're about to go into actually a large sort of re-look at our segmentation.

Because what we found, because of the demographics and attitudinal shifts, that three of our personas now make up a little bit over 50 percent of our customers. And so at that level you start to have less and less of a meaningful segmentation. So, we're actually going to rework it.

But the point is here that, you know, because of the segmentation we understand our customers, we understand what drives them. And we

can't be successful if we take a one-size-fits-all approach.

So when you add all these things up, what this is telling us is that in order to be successful in engaging our customers we have to get past this third job. We have to offer relevant choices; we have to make it easy for customers to participate; and we have to make it worthwhile.

You know, I bought a number of lemon trees recently, and I could look at watering them every night when I get home from work as a third job. But because I am not going to pay a dollar a lemon at the grocery store, and because they're not going to truck that lemon from the field to the market, having the lemons and taking care of them is worthwhile for me. We have to do the same thing for energy management.

And because of our segmentation and this one-size-fits-all approach, that doesn't work. We need to appeal to the -- recognize and appeal to the diverse motivators that our customers have.

So, now when you tie that to our objectives, what we're really looking at doing are two things. First, maximizing participation in

our demand side management programs and our rates.

And the reason I'm focusing on demand side management, when you go back to our third, that customers don't want a third job, they don't want rates, they don't want programs and they don't want services. What they want are solutions. And they don't want to have to sit through our energy efficiency, our demand response, our solar, our low income.

What they wanted us to do is to pull this together for them, and bring these integrated solutions to them so that they can then take action. So, we want to maximize the participation in our entire portfolio, as well as our rates.

And the longer term, we want to move customers, help them move to adoption of a more energy efficient lifestyle. And the reason it says energy efficient is our customers view demand response, energy efficiency, conservation as energy efficient.

So, you saw a similar model in PG&E's presentation. And what we're doing is the same thing. We have to move our customers, help them move through a continuum. Our customers are at different points in this continuum, and we have to

recognize that.

We want them to start by taking action, but ultimately we want that action to translate into a long-term behavior change.

So, how are we going to do that, given the challenges that we've heard about all day and some of the things that we know. Well, the first thing that we want to do is leverage our segmentation. We know a lot about our customers and we want to use that information to help make it easy for our customers to participate.

So, here's an example of how that works. And this is part of our campaign to enroll customers in our summer discount plan, which is our version of A/C cycling.

And so what we did was we had the same program, and we tailored that program to appeal to our different personas. So, in one outreach tactic we really talked a lot about saving money. In the other we talked about empowerment, giving customers the power to control, save and set their level of comfort.

In the third we talked about the summer discount plan in terms of how it impacts the environment. And all of these were modeled and

tailored to people in the different personas that received them.

So, let me show you how this translated. For our product of savers and conservers and our uncertain savers, so those who were really interested in saving money as their primary motivator, we had a piece that really focused a lot on, I can save money with little effort.

And here, this is all about, you know, saving money and the benefits that they'll get through this program.

Second, we had this piece for our product of savers and this other group that we have that's set in their ways, they want control. They want to feel like they're in control, whether it's how much they save or their comfort level.

So, this piece really talked a lot about, you know, being able to have that control so you can choose your level of comfort, how often you're cycled. You choose the level of your savings, as well.

And then the third piece talked about saving the environment, the impact that it has on the environment. And here it really talked about not having to use peaker plants.

But, if you notice, and it goes back to one of your earlier comments, these people are still interested in saving money. So we also wanted to make sure that they saw those benefits, as well.

So, we use the same program, appeal to different motivators, based on the segmentation that we have. And we want to continue to do that as we go forward, but in a much more robust way.

The second approach is that we want to integrate our rates and programs. And our SmartConnect, which is our version of AMI, is really a fantastic opportunity for us to do that.

First of all, we've going to be talking to all 5 million of our residential customers plus our small and mid-sized business customers. So we want to leverage that opportunity as much as we can in order to better engage our customers.

And we're looking at doing that in a couple of ways. First, through SmartConnect our customers are going to get information about their usage, information that will help them make decisions. But we don't want to give them information, we want to give them control. We want them to be able to not have to do a lot of

analysis and calculations. We want to translate that information to something that's meaningful and actionable to them, so that they can then determine what the best solutions are for them.

The other thing we want to do, because customers don't want a third job, is to leverage technology as much as we can to make it easy to participate in demand response. So, what could that look like.

Well, if you had, for example, some plans that customers sign up for based on their personas, and I'll talk a little bit about those in a minute, and then you had thermostats preset around the plan that you sign up for, then your thermostat would control itself based on what you've already asked it to do.

And then we're also looking to leverage smart DSM appliances, as well. So customers sign up for a plan, their appliance is programmed and it takes care of it. So, it takes a lot of the work out of it for our customers. So we want to be able to leverage that technology.

We also want to be able to leverage the energy information through home displays, things on the internet and also other kinds of mechanisms

to let customers know what's going on with their usage, with the pricing so that, again, they can take advantage.

But we want to use the Apple model. We want to make it very easy for customers.

The second thing we want to do is to use our personas and our information that we have about our customers to provide integrated, intuitive and holistic solutions.

So, again, customers don't want rates, services, programs. What they want to be able to do is to look at something and say, that's me. I want to sign up for the green plan. It has the rate I want; it has the energy information tool; has load control; energy audit that would help me. And for the green plan it would also have electronic billing and payments, so no paper would be used in this process.

And we've looked at a number of different options like a performance plan for business, a comfort plan for customers who want to participate but don't want to go all out, and want to be able to have some control.

We've also looked at the saver plan. And here's where you put in the maximum kinds of

things like a CPP rate that would really drive behavior for customers if they change their behavior -- or benefits for customers if they change their behavior.

We're testing these with our customers right now to figure out what's the right combination; what is the right number of plants we should have; and what's the right components to have in each one of these plans.

Then the third thing that we need to do, or the next thing we need to do, is to integrate key players. As a utility we can't do this on our own. We need to really leverage all the market actors that are there in our marketplace.

That includes statewide actors like the Energy Commission, the CPUC, the ISO, other players that are out there.

Then within the utility we can also use our strengths and go out and talk to our customers and help to engage them.

But we're also going to need partnerships and strategic alliances. So we're going to be working and working with cities, counties, retailers, aggregators. We're going to be working with appliance manufacturers,

thermostat manufacturers, all to pull this together so that we touch our customers and we engage them.

And there's a lot of exciting things we can do if we all come together and work for the common solution of engaging our customers.

The next thing we want to do then is take this all to our customers in a way that is integrated across the board.

So the state has a statewide brand and is in the process of relooking at it and refreshing it. So we want to make sure that we're leveraging that brand, and using that to create awareness and helping customers understanding the link between action and the benefit.

Then, within the utility, we want to have some umbrella efforts. Plans are an example of an umbrella effort that pull together all of our demand response, energy efficiency, solar, low income kinds of efforts are raised. We'll take those to our customers.

We'll also bundle communications for like, let's say, our business customers where we have specific industry with specific usage patterns. We'll be able to take the solutions out

to our customers that make the most sense.

And we also have seasonal campaigns that we run where we want to highlight and impact behavior and engagement in certain periods. We just finished one now in the last couple weeks, which was the seasonal campaign for getting ready for summer. And that combined the A/C tuneup and the summer discount plan.

Currently we have received about 30,000 applications for rebates for A/C tuneups from our residential customers. And we continue to sign customers up for our summer discount plan.

We're going to need to focus on individual programs, as well, but we want to do that under the umbrella of the statewide marketing, our umbrella programs, as well. And really focus on customers with the highest propensity to participate. And make sure that we reach out to them through all the various channels to engage them in the programs that are out there, and the solutions that they can take part in.

So, by doing this what we think we're going to get, and we really do need to get, is greater participation in our offerings, our rates, our programs, our energy efficiency.

By looking at this holistically in our filings we've figured out how much money we need. And we've, you know, allocated those in each of our filings. And this, we think, rather than looking at them piecemeal, allows for more efficient use of the dollars across our DSM portfolio.

And ultimately, for our customers it means that they should be able to make more informed decisions and benefit from the portfolio programs that are out there. And also move to this more energy efficient lifestyle, which benefits all of us.

So that kind of gives you an overview of our strategic approach and what we hope to get from it. And if you have any questions I'd be happy to try to answer them.

PRESIDING MEMBER PFANNENSTIEL: Thank you. I really appreciate the strategic approach; that looks pretty interesting.

Do you anticipate different rate designs for each of the different kinds of plans that you have in mind?

MR. KINER: We do. We're looking at different rates that would meet the needs of

customers, either ones that we have, you know, on our current docket that are being developed, or perhaps a new kind of rate that would benefit and appeal to the group. So, like an electric transportation charging rate for offpeak.

PRESIDING MEMBER PFANNENSTIEL: So they'd be voluntary rates, then. So this whole program sort of is a voluntary mix-and-match, pick-what-you-want for residential customers?

MR. KINER: Correct, but everyone would ultimately choose one of the plans that's there.

PRESIDING MEMBER PFANNENSTIEL: Right, but do you expect that the AB-1X is going to be a problem with this, and everybody has to pick a plan, then they're all voluntary?

MR. KINER: I think AB-1X is a very big challenge that we have to work around. If it wasn't there it would be a lot easier.

But, I think, and this is my opinion not our rate designs team opinion, I think that it's something that we do have to work around until AB-1X is not an issue.

PRESIDING MEMBER PFANNENSTIEL: I think fundamentally what I'm trying to get to is whether your view of what you're offering here, and I

really like the overall approach to it, is designed to give the customers lower bills, in essence, or lower bills plus whatever other benefits they're looking for, or is it more designed towards system cost reduction, getting some demand response benefits? Do you see a tradeoff there?

MR. KINER: Yeah, it's designed to get the benefits by engaging the customers, most definitely. And it's interesting, I'll throw this in, but we have found, especially in the conservationists group, that customers are willing to pay more if they think they're benefitting the customer.

So while the cost in --

PRESIDING MEMBER PFANNENSTIEL: I'm sorry, customers willing to pay more if they think they're --

MR. KINER: If they're benefitting the environment, so --

PRESIDING MEMBER PFANNENSTIEL: Right.

MR. KINER: -- they'll pay more for a green product. That's not to say they want to pay for it. We're very aware of that. But, so lowering the bills is a portion of it, but it's

really helping customers meet their needs through the energy.

So, if they can impact the environment and they're on, let's say, a green rate where maybe money goes in to pay for renewables, let's say, they're willing to do that. So they wouldn't necessarily see, let's say, a lower bill in that case.

But we want to derive the system benefits and keep rates as low as possible for customers.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Art.

ASSOCIATE MEMBER ROSENFELD: Yes, I applaud your enthusiasm, but I'm going to try to get you to -- I feel slightly uncomfortable. I think it's just fine if Edison provides -- goes for three persona and a choice of anything from A/C cycling through PCTs and pool pumps for programs.

But, this is a little bit like I've got to make a plane flight to Seattle. Well, I'm used to going online with Expedia and I have a choice of Southwest or Alaska or United. And I want that choice.

Now, what you're saying sounds a little bit like you've got to sign up with Southwest, that's the biggest. You haven't really said that, but I'm just trying to get you to make me feel more comfortable.

In addition to all your plans, and I'll admit I would probably sign up for one of your plans, I want you to say but there'll also be the pure vanilla, simple vanilla choice in which there is a statewide tariff published, hopefully PCT with time-of-use.

And if I don't want one of your plans I can just program my PCT and my pool pump and my dryer and whatever, and don't have to make a choice of Southern California Edison plans.

MR. KINER: Absolutely. That is, indeed, what we're planning to do. And if you think about what we're doing, someone brought up cellphones before, and when I have talked about this it's Directv. You know, they have, I don't know, 1000 channels now. I don't want to go through each and every one of the channels and figure out which ones I want to, you know, watch and what I want to pay for, so they have --

ASSOCIATE MEMBER ROSENFELD: Bravo.

MR. KINER: -- the sports package, the movie package, but I can also watch any channel that's out there if don't want to sign up for one of those.

So, what you're saying is what our intention is. That we're going to have plans that are out there for customers who want to choose something that benefits them, that they can relate to. But we're still going to have the option that if someone wants exactly what you described, they can do that.

ASSOCIATE MEMBER ROSENFELD: And presumably they'll still be able to go to your call center for help if they can't figure out how to program the PCT?

MR. KINER: The call center, and we're looking at some other options, as well, to do --

ASSOCIATE MEMBER ROSENFELD: Okay, so you're making me feel more comfortable. Thank you.

MR. KINER: Oh, yes.

PRESIDING MEMBER PFANNENSTIEL: I guess, let me build on that then, I just want to make sure that all of these are designed -- I mean they're all excellent customer programs, I have no

problem with that.

But I want to make sure that they're also load management programs.

MR. KINER: Absolutely.

PRESIDING MEMBER PFANNENSTIEL: They're also designed individually and in total to derive some demand response benefit. And I think that's where I haven't quite seen where that's coming from.

I understand some customers will be gladly willing to pay more at peak because they understand that that, you know, imposes more cost. But I think most customers want to manage the bill and want to have some control over why they're paying more.

MR. KINER: Absolutely. And what I probably should have said at the very beginning is that I take the demand response programs that are developed in our demand response group, which are designed exactly to do as you described. The rates and our energy efficiency programs that all have benefits associated with them.

And I, through my group, take those and try to figure out what's the best way to engage customers in those programs that have those

benefits already associated with them.

PRESIDING MEMBER PFANNENSTIEL: That's great. I'm also interested you show this mass media efforts and some statewide marketing. I'm very interested in that. Have you started that yet? Where is that?

MR. KINER: The statewide marketing is right now, as it exists, is the current Flex-Your-Power and Flex-Your-Power-Now.

PRESIDING MEMBER PFANNENSTIEL: Oh, so it's just, it's just Edison's contribution of Flex-Your-Power. How much is that per year do you think?

MR. KINER: I believe it's around $20 million, in total, over three years.

ASSOCIATE MEMBER ROSENFELD: For the statewide program?

MR. KINER: Over three years. It's about 20 million over three years, so 20 --

PRESIDING MEMBER PFANNENSTIEL: But that's the whole program, not Edison's --

MR. KINER: Right, correct.

PRESIDING MEMBER PFANNENSTIEL: -- portion of it? So Edison's portion of it is --

MR. KINER: About 7.

PRESIDING MEMBER PFANNENSTIEL: -- about 7 million a year?

MR. KINER: Right. And I know there's work that's being done to evaluate how effective that campaign is and if it should move into another direction.

So, if there is a campaign we want to leverage it versus creating our own version of that campaign.

PRESIDING MEMBER PFANNENSTIEL: Okay, so you do not see this first bright green segment really being an Edison program? It means that there will be a statewide campaign and you'll contribute something to it?

MR. KINER: Yeah, and we'll leverage the messaging and also help to drive what that messaging is.

PRESIDING MEMBER PFANNENSTIEL: Okay, thanks. David, did you --

MR. HUNGERFORD: Yes, in looking at this approach where you're figuring out your different customer segments and trying to develop the products that appeal to some of those different customer segments, build those programs, what percentage of your total residential and small

commercial customer population do you expect to sign up for one of these?

MR. KINER: That's actually -- I would answer it, if I knew the exact number. But that's what we're doing right now for our research, is to figure out, you know, what's the right number of programs. And then what percent of customers would sign up for them. And then to maximize --

MR. HUNGERFORD: I'd be good with a ballpark, within 10 percent. Twenty percent of customers? Eighty percent of customers?

MR. KINER: In the plans?

MR. HUNGERFORD: In these plans, in these --

MR. KINER: Oh, in total?

MR. HUNGERFORD: -- things they --

MR. KINER: Yeah, oh, in total we're looking, the numbers that we've been working with are about 60 percent of our customers in total. How they break out amongst the various plans, I'm not sure.

MR. HUNGERFORD: So you expect in your current, your summer discount plan, I mean, is roughly what percentage of your residential customer base?

MR. KINER: We have, I think, Larry, about 300,000 summer discount, customers on our summer discount plan. And so we have about 5 million customers.

MR. HUNGERFORD: Can you do the math for me?

MR. KINER: I would if I could. That's why I'm in marketing.

(Laughter.)

MR. HUNGERFORD: If I remember correctly, that's ballpark, 20 percent, right?

MR. KINER: Right.

MR. HUNGERFORD: Somewhere in there? Okay. And so the question is what are you going to do for the remaining population customers for educating them about how to respond to eventual time-of-use or dynamic rates that they will all be on, at least if the PUC's plans go forward the way they're currently going?

MR. KINER: That's an excellent question, and that's why we need to continue to have targeted individual program efforts that you see in the yellow. Both through Southern California Edison talking to our customers, but also through the partnerships and the strategic

alliances. So that we continue to reach the customers on some of the individual program basis, as well.

MR. HUNGERFORD: Okay, so --

MR. KINER: But we want to try to capture as many customers as want to participate in these plans to make, you know, gain those efficiencies.

MR. HUNGERFORD: Okay. You're going to have to correct something for me, because what I'm hearing you say is that we're going to work really hard to get people into our programs.

And the question I'm asking is what are you going to do for the people that are not going to sign up for your programs.

MR. KINER: Well, we can continue to make them aware, and try to move them to that. But we can't make every customer participate in our programs unless we make the rates mandatory and the participation mandatory.

MR. HUNGERFORD: Well, one of the education problems that we're facing here as we move towards an era where we change the fundamental way in which to purchase electricity --

MR. KINER: Right.

MR. HUNGERFORD: -- is that all customers are going to be facing it --

MR. KINER: Right.

MR. HUNGERFORD: -- and thus all customers require some level of education.

MR. KINER: Right.

MR. HUNGERFORD: And the question that I'm asking you is what kind of approach are you guys trying to move towards. We've seen that in a couple of the other presentations, and that's --

MR. KINER: We're moving towards reaching and educating every customer and giving them the control and the ability to participate either in a plan or a specific program.

So, we'll reach all the customers. And that's one of the beauties of this marketing, because we're going to go out to each and every customer.

So, as we roll out we'll be talking to customers, you know, announcing that the winter's coming. We'll be talking about, you know, a door-hanger with information, a welcome package and ongoing communication with our customers.

But they'll ultimately choose, as long

as it's voluntary, whether they participate or not. But we'll still continue to educate and reach all of our customers with our message.

MR. HUNGERFORD: So do you not see a background underlying time-of-use or dynamic rate for all customers?

MR. KINER: If that's what the ultimate offering is, then that would be the background or underlying rate.

MR. HUNGERFORD: So they would be participating but they're not participating. That's my point, they would be facing a rate that's different than the one they're currently on.

MR. KINER: Right, let me --

MR. HUNGERFORD: And -- but they would not --

MR. KINER: I'm sorry.

MR. HUNGERFORD: -- have joined a program.

MR. KINER: Right. And let me give you an example. My bill's $40. Okay, that's half of a tank of gas for me. You can put me on a time-of-use rate. I may choose to participate or not.

And so the fact that I'm on the rate

doesn't mean that I'm engaged and active in that rate. So, you know, I'm aware I'm on it. I might not choose to change my behavior at all.

So what we want to do is to try to show the benefits to customers of why, even if, you know, your electric bill is half a gallon (sic) of gas, that there's a benefit to you.

And it could be that there's environmental benefit. It could be that there's societal benefit. It could be a number of other benefits. So want to continue to reach out to customers and try to find that motivation. Because price, alone, might not be the motivator. And even though I'm on that rate, I may not move and act.

So, ultimately what we're trying to do is to get the benefits out of it, you have to get people to behave a certain way, and take action.

MR. HUNGERFORD: A slightly different question, just to follow up --

PRESIDING MEMBER PFANNENSTIEL: May I just follow up on that before you --

MR. HUNGERFORD: Okay, good.

PRESIDING MEMBER PFANNENSTIEL: -- I don't think, by the way, that the only benefit

from offering a properly designed time-varying rate is the customer taking action.

I think societally having that correctly designed rate out there and then educating customers about that rate, even if the customer chooses to spend more money then that customer would spend if the customer took that action, I think that that's a benefit to society.

MR. KINER: I agree.

MR. HUNGERFORD: Good follow up. The other question was for the programs you're looking to develop, is it SCE's intent to purchase enabling technologies and install them in the customers' homes as part of those programs? Is that the approach you're taking?

Or are you looking at both doing that for some programs, and taking advantage of customer purchase to enabling technologies in others?

MR. KINER: Is there anything you want to say on that?

MR. HUNGERFORD: Because what I thought I heard was that were going to program thermostats -- develop thermostats that you would then install in people's homes that had different lifestyle

choices programmed into them. And I wanted to correct that impression if that's wrong.

MR. OLIVA: Good afternoon; my name's Larry Oliva and I'm the Director responsible for the demand response programs at Edison.

To answer your question it's yes to both. That we would offer to provide technologies such as programmable thermostats to customers enrolling in our PTR-type program with enabling technology, or a variant of our summer discount plan.

But we would also provide, through our smart connect metering technology, you know, price signals that go to devices that customers may purchase on their own. Such as information display devices, energy management programs that are displayed on televisions. I mean any kind of thing that the marketplace comes up with that might use the price signal or event information that would be transferring over the SmartConnect network.

Is that helpful?

MR. HUNGERFORD: Thanks.

PRESIDING MEMBER PFANNENSTIEL: Anything else? Excellent, thank you -- oh, Tim, did you

have a question?

MR. TUTT: Yeah, I had a couple.

PRESIDING MEMBER PFANNENSTIEL: I'm sorry.

MR. TUTT: I had a couple of questions. First, I really like the starting point that customers don't want a third job. And I presume that you're looking at all your programs trying to find a way to get customers to change their behavior, to use less energy and produce peak demand response without it feeling like a third job.

MR. KINER: Correct.

MR. TUTT: Is there any more detail on how you might do that? Or are you just still researching that?

MR. KINER: We are researching it. But part of what we were talking about where, you know, you have, let's say, a thermostat, whether we give it to our customers or they go out and buy one that's already programmed, they don't have to work, it's done.

And so we wanted, like I said, to take the Apple approach where it's just easy, it's intuitive, and they don't have to, you know, spend

a lot of effort.

The other thing we want to do is to not provide information to customers. We want to provide -- just raw information -- we want to turn that information into useful data that they can then use to act on, versus having to sit down and say, okay, I just got my energy usage for the day or the week, now what does it mean. Let me calculate this out. Because you've seen my math scores or skills when David asked me to figure out the percentage.

So we're trying to do things like that to make it easy for customers.

MR. TUTT: And it actually was around 6 percent, I think, --

(Laughter.)

MR. KINER: Thank you.

MR. TUTT: The second question is are you planning on having any services or interactions related to this at the time that you first sign up a customer, or when a customer changes service from one house to another, things like that? Change-of-service kind of program or target.

MR. KINER: Yes, we are looking at doing

that. Both in terms offerings so that it's easy, you know, to transfer your service. But also to set up some of these things like the technology in your home, perhaps with a geek squad or a roving storefront while we're deploying meters.

So, we're exploring those kinds of things. Obviously, we have to look at the cost and see if it makes sense. But we want to help customers as much as possible.

ASSOCIATE MEMBER ROSENFELD: I guess I do have another question. I'm not sure in a sense whether this is a question for you or Larry Oliva, but you said, with some admiration, a couple of times that you hoped for a success like the Apple hardware.

Apple hardware -- Apple has a reputation for designing very good hardware. I'm sure that they do lots and lots of focus groups on can I understand how to program this software and so on.

And I was talking to Larry Oliva before lunch. I said this earlier on this morning, but I also want to be reassured. I'm still bothered by the pollution of the market with badly designed hardware. The famous phrase of the flashing clock on the VCR.

I guess, Larry, I'm going to ask you to come up to the mike for a minute. When you put out specs for PCTs what are you doing to make sure that the hardware has gone through the necessary focus groups and it is capable of being programmed without your having to have an IQ of 150, 250? And patience.

Can you reassure me a little bit about that, too?

MR. OLIVA: Well, I'll try. Let me tell you so far where we are with that. And actually I was going to speak in the comment period, and I might as well just tell you what we've learned at this opportunity.

ASSOCIATE MEMBER ROSENFELD: And can you talk a little closer to the mike.

MR. OLIVA: Okay, is this better?

ASSOCIATE MEMBER ROSENFELD: Yeah, that's better.

MR. OLIVA: Okay, sorry. We issued an RFI in April for quotes on smart thermostats, or programmable communicating thermostats that meet the open-hand basic requirements, as well as our own requirements for programs that we intend to roll out.

Just to get an idea of who the vendors might be, who we want to do business with later, and also get an idea of the price point. Because the price point is important to us as we roll out our program designs.

And we got 13 responses from that, and five of those responses were compliant with what we were looking at. And three of them were at price points that are what we're looking for with respect to our business case. And also basically confirm what we've heard in these proceedings earlier from Ron Hoffman and others that we are able to get programmable communicating thermostats in the $50 range.

The range we got was about $55 for 2010 prices for lots at the wholesale level, at about 100,000 units. So, anyway, we think we can get some devices at the price points that we're looking at, and that's right now. Right now in terms of the quotes.

But what we intend to do is to work with these manufacturers to then, you know, finalize the features. And one thing we want to do is a behavioral pilot with our customers to better understand what they see a thermostat should do,

or what the issues and problems might be with working with thermostats.

Something similar to the SMUD study that was talked about today, but we would look at, you know, the override feature, the understandability, the event information that they want. So we want to look at, you know, the different options and choices that the customers face, and poll them, survey them, sort of focus group, but it's a focus group after they've had experience with the devices.

And that would inform us and inform our partner manufacturers on finalizing a design. So, I think your point is well taken. You know, VCRs are a lot harder to program than maybe even the manufacturers think. They are even, for me. And we don't want to go in that route. We want a device that is simple and easy to use.

And as Seth pointed out in his presentation, that's part of the three-circle bubble that one bubble is the partners that we're going to be working with. And we are working with the design firms. In addition to the thermostat manufacturers, we're working with product design firms who are helping us understand the best ways

to work or communicate with and engage customers.

So, it's a great point, and we are working on it.

ASSOCIATE MEMBER ROSENFELD: That's reassuring.

MR. OLIVA: Do you feel better?

ASSOCIATE MEMBER ROSENFELD: Yeah, I feel better. Thank you.

MR. OLIVA: Okay.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Seth. I think we'd better keep moving, we're running out of time here. But we really appreciate it.

MR. KINER: Thank you for the opportunity.

PRESIDING MEMBER PFANNENSTIEL: Very very good presentation.

MR. TAYLOR: Our last utility presentation is from SMUD from Vikki Wood. I'm sorry, Vikki and Amy.

MS. WOOD: Good afternoon. I would like to thank the Commission for this opportunity to talk about what SMUD is doing regarding assessing customer needs and providing customer education.

Amy Furlong from our communications and

media group, and I are going to be tag-teaming this presentation. I'm first going to talk about what the SMUD Board is calling its new compact with the customer. And how this compact relates to understanding customer needs, educating customers and motivating them to change their energy use behaviors.

And next I'll be talking about some current and former research that SMUD has embarked in as it relates to, particularly relates to demand response behaviors, but also to energy efficiency and some distributed generation programs that SMUD is in the process of developing.

And then Amy will be coming up and talking about a new umbrella marketing and education campaign that SMUD is in the process of rolling out today.

This is SMUD's vision statement which we're in the habit of trotting out at each of these workshops. But it's especially cogent today because the concept of the compact is embedded in this vision statement, which essentially says that SMUD will empower its customers to make environmentally sound decisions regarding their

energy use.

And a couple of weeks ago the SMUD Board approved the addition of some principles, implementation principles, for this vision. And these principles are to offer customers choices; to enable all customers to act to achieve the vision goals; to collaborate with partners to achieve the vision; to invest in energy efficiency infrastructure; and to develop and deploy a comprehensive strategy to communicate with our customers.

Also to leverage SMUD's leadership role to achieve the goals, but I'm not clear about what that means.

Essentially the compact is a re-definition of SMUD's relationships with our customers in which we expect them to have a far more active role in insuring that they have both clean and reliable energy now and in the future.

And under the compact it's SMUD's -- oh, the Commission had asked in it's notice of this workshop about the roles -- the rights and responsibilities of utilities and customers.

And regarding that, under the compact we view it as SMUD's responsibility to identify

customers' needs; to educate customers about energy efficiency -- or energy issues, and to provide them with solutions options.

But on the other hand, it's also our customers' responsibility to actively participate in solving our energy problems. And this means essentially that the question is not whether customers will be engaged in solving energy problems, but how they're going to do it.

Like the vision, the compact also has its implementation principles. And they resemble those for the SMUD's vision, but they're not identical. And these are to engage customers to change their energy behaviors; to link rates in programs to awareness of environmental impacts; to reduce peak energy use; to develop programs that solve environmental problems, preferably locally.

And to provide customers with technological and also educational tools to participate; and to convey a consistent message. And it's these engagement of customers providing education and conveying a consistent message that we're going to speak to especially today.

Now, the Board views the elements of the compact as having four elements. These are full

MI deployment, time differentiated rates, demand response energy efficiency and distributed generation program options. And an integrated approach to marketing, education, outreach and customer engagement.

We have spoke to the first three in prior workshops and it's this last one that Amy and I will be talking about.

SMUD has conducted a lot of research regarding, especially regarding demand response, but also customer needs over the years. And this research is still particularly relevant to some of the programs that we're trying to develop today.

Much of the research relates to our air conditioning cycling program, which we call PeakCorps, which has been around for more than 30 years.

We also have conducted a couple of pilot projects which were referred to earlier this morning. One is called the PowerStep pilot which was conducted somewhere around in early 2001/2002. And essentially it's a residential air conditioning load control pilot using thermostats. So it's our PeakCorps program with T stats as opposed to controllers.

And the other, and these are both projects which we conducted in conjunction with the CEC.

The other is the SMUD power choice pilot. This is not the power choice pilot that Mithra was talking bout this morning; this is an earlier pilot. The original one, which was a residential TOU CPP rate, which is a real residential TOU CPP rate using thermostats.

And even though this research is a little bit dated, it still has a lot of relevance to the programs that we're developing today, since the research programs were designed for active load management and price response. And subsequent to this research -- I mean our ACLM program today, for the last ten years, has only been used as an emergency program for emergency reserves.

One of the issues that the Board is struggling with is how to get customers to participate in these programs. Whether to make them voluntary opt-in, voluntary opt-out, mandatory, particularly in response to time differentiated rates.

And some research -- look at the

historical record of our ACLM, our PeakCorps program can give us a lot of insight into what happens to programs over time under different circumstances.

And for the ACLM program we took a look at participation. We had information about how customers were solicited to participate. And from a time period of about 1990 through 1998 we had essentially two solicitation methods.

One was where we sent out, you know, we had the typical media solicitations like bill inserts and direct mail, television, radio, trade shows. And the other we had three conditions under which programs were automatically signed up for the program. The customers who were automatically signed up were the low income and air conditioning rebate program participants, new construction dwellers and occupants in homes that have existing cyclers. So that when there was a tenant turnover, an occupant turnover in those homes, they were automatically signed up.

And all these automatic sign-ups were on a middle cycling strategy so that they could either move up or move down or move out if they wished to.

And in examining the history from 1998 backwards, of how customers were signed up, you can see that attrition is much greater for opt-outs and opt-ins, and that's to be expected. And this is sort of almost regardless of how long customers participated. Except eventually they converge out here about on year 20.

The first year attrition for automatic sign-ups or opt-outs was about 45 percent compared with 30 percent for opt-ins. And second year attrition is 45 percent versus 64 percent. And by the third year 75 percent of opt-outs and little more than 50 percent of opt-ins are gone from the program.

But many of these, when they leave the program I haven't distinguished, and I was unable to distinguish between whether they moved out, which is natural attrition, or whether they dropped out.

However, you can still see that regardless of what looks like an extreme attrition rate for these, we actually managed to grow the program tremendously during the decade of the '90s.

And if you look at the bottom chart

there you can see that opt-out customers eventually comprised a larger portion of our new population growth for the program. And that's because, you know, there may be some turnover, customers who leave one premise may move into another premise, and re-sign-up for the program, or be automatically placed on it.

But what happens is over time those opt-out customers become the bread-and-butter of this program.

There was a time in the -- recently, a couple of years ago, where we had neither -- we still have some aspects of opt-out participation in our program today, but there was a time when we discontinued the all automatic sign-ups. And within a very short period of time, like 18 months, we lost about 20 percent of our participation.

And we recovered that, but you can see how important it is for the sustainability of these programs that we have some element of automatic sign-up.

We have a number -- over the many years that we've been evaluating PeakCorps program, there's some -- I've sort of collected some

research highlights here that we can talk about.

On average, the 1990s were the period of the most robust activity in the program. And we had about 100,000 customers, and on average we dispatched to them eight times per summer season.

And we found that PeakCorps participants, nonparticipants were pretty much equally satisfied with SMUD, but the PeakCorps participants were very satisfied with the program.

And also we found out that the level of satisfaction is directly related to the cycling intensity. And this means that the higher the cycling intensity the higher the satisfaction. And this may be because there are a lot of -- they're self-selected into the cycling options. And 100 percent customers may have a larger free-ridership rate. In other words, they're being paid more for doing less. And so, of course, they're pretty satisfied with that. There's that element.

But also we got larger savings, of course, the higher the strategy, as well. So they were making a larger contribution.

We learned that 25 percent of nonparticipants are never going to join any

program like this. And so it's important to have options for these programs and options to these programs.

However, once signed up, 67 percent of the participants actually remain on their original cycling option. So that there's a huge element of inertia operating here. More increase the cycling option than decrease or drop out of it.

And also we've learned that when we ask customers a direct question about what's most important to them in terms of program attributes, they always tell us -- the majority always tell us that it's the incentive.

However, we did a conjoint study, and when forced to make tradeoffs among the various attributes, it turns out that cycling intensity, which is a proxy for comfort level essentially, is actually the most important attribute.

We also conducted -- we had the PowerStat program that we did with the CEC and it was essentially the PeakCorps program with a thermostat, as opposed to a cycler. And we discovered that the unit kW savings for the PowerStat program were almost double that of the savings for the PeakCorps program.

And part of this is explained in terms of the difference in technologies, because the two-way communication in the programmable communicating thermostats that were used allows us to determine whether a thermostat and/or an air conditioner is operating -- or is actually on the premise.

And there may also be differences in populations because the PowerStat customers were generally more involved in the program than our larger PeakCorps customers.

We also know, however, that 30 percent of our A/C cyclers are missing or have been disabled.

ASSOCIATE MEMBER ROSENFELD: What fraction, Vikki?

MS. WOOD: Thirty percent. And so this difference in technologies does account for quite a bit of that difference in savings that you see there. Although we can't tell you how much.

We also did the PowerChoice program. This is the original PowerChoice, not the son of PowerChoice that Mithra talked about today. This is the one that Loren alluded to.

And highlights from this study are that

critical peak savings -- and this is under a moderate, fairly moderate TOU rate differential -- are about 16 percent, which is, I think, commensurate with what we found through statewide pricing pilots.

And appliances that participants are least likely to give up during critical peak period are their computers and their televisions. They'll watch them in the dark, and they'll watch them hungry. But they'll watch them.

(Laughter.)

MS. WOOD: Also, a large majority of participants actually checked the thermostat display to see if they were in a critical period, or if a critical period was coming up, because the thermostat was able to give them heads-up notice, a couple hours notice in advance. It was a blinking red light -- a green light, a blinking red light, and a solid red light or something like that. And most customers did actually consult that thermostat.

More PowerChoice findings. During critical peak periods about half of customers were still comfortable. That's pretty good. On the other hand, about half of them were uncomfortable.

There's a positive relationship between savings and checking for a critical event, or checking usage data. They also had usage data available on the internet that they could check. And very few customers actually consulted that. What they would really prefer to do is just to look at that thermostat that was sitting on the wall.

There's a negative relationship between savings and adjusting the thermostat temperature during critical periods. That makes sense. And there's no relationship between savings and knowledge of the rate schedule.

And we think this is because customers, the rate schedule wasn't as difficult to comprehend as the current PowerChoice rate. But it still, you know, who wants to memorize the hours of use. Most of them did not know the hours of use.

However, they did consult the thermostat. So they knew when they were in a critical period, and that's when they managed to effect the most savings. And then they also had their thermostats programmed for shifting peak off the shoulder -- off the peak and the shoulder

periods.

Also, customers who saved the most were those who were most aware not only of the critical peak periods, but of their own behaviors, and how those behaviors related to their bill.

Now, their bill was not particularly enlightening. But they were given their time-of-use periods, but it was an end-of-the-month. And they weren't given information, real-time information, or even historical information about their usage.

These are current SMUD demand response behavioral pilots that we're conducting right now. You've heard about two of them this morning. One is the PowerChoice energy display pilot, and the other is the small commercial thermostat summer solutions pilot.

The third, which is an energy display pilot in solar homes, is in the process of identifying and soliciting a candidate solar home community for its sample. And so it's just beginning to be underway.

And we plan to coordinate this with the PowerChoice home energy display pilot, because they're both displays. In terms of coordinating

and using the same questions on some of the surveys, they won't be identical, obviously, but we'll be able to, at some point, actually compare response in homes which have the ability, you know, have solar production as well as consumption.

Some current customer research that we're doing. We're out on the streets with the new 2008 residential plan saturation survey. And this includes a sub-sample of PeakCorps customers.

And we're embarking on a new segmentation study which we're going to use for target marketing and, well, identifying customer segments, and then tailoring our products and services, and our messages and our customer education.

And these are sort of omnibus surveys where they're going to be including information regarding both attitudinal and behavioral factors, energy usage, geographics, demographics, social values and needs.

We also have some customer energy efficiency demand response and distributed generation programs. Part of the compact with the customer is to offer the customer a portfolio of

options. And so we're not distinguishing.

And when we make these offers to the customer we want them to have a one-stop shop, and we want an integrated approach.

Some interesting ones that we're doing are solar shares, which we have a one megawatt solar energy plant in Wilton. And for those customers who can't put solar on their own dwellings, either because they can't afford the larger system, or they don't have solar access, this allows them to make a commitment to renewables. And they're credited with their percentage of solar production on their bills, just as if they were a solar producer.

Also we are offering some new customer engagement offerings. We just came out with our greencommunity.org website, which provides customers with tips that help them mitigate their environmental impact. And it has a carbon calculator, and you can go in and calculate your footprint.

And then also has options for taking actions. You can sign up for the green energy rate. Eventually you'll be able to sign up for the solar shares. You can sign up for a biomass

plant and pay a little extra on your bill to mitigate your personal carbon footprint.

Also we have the neighborhood energy and chamber energy allstars. And these are associations that sign up as a group, as a community group, to commit to reducing their energy consumption, and particularly peak consumption.

And now Amy will come up and talk about our integrated marketing campaign.

MS. FURLONG: Hi. Amy Furlong, SMUD's communications and advertising services. Good afternoon.

What I'd like to do is show you how kind of the architect behind the umbrella marketing strategy for SMUD. This is the first step that we're taking. And then the research that we've conducted to develop the creative. And then show you the creative.

This diagram shows basically the overall umbrella, overarching strategy where we have more the higher level education. And then the how-to falls under the areas of energy efficiency, peak and green. And the P represents the programs, sort of the how-to for the customer.

So the higher level is the campaign I'm going to show you today. More of the educational based. And the programs are the how. It also will be implemented for when we roll out the time-of-use pricing. And it's being used with our community engagement outreach strategies.

So, the research strategy, the whole plan is that we wanted our advertising to represent the voice of the customer. And we started with nine concepts that we did online surveys to our customers, really looking to see which ones appeal to them emotionally and would motivate them to change their energy behavior, as well as several other aspects.

We took the three emerging -- the three that came out of the online surveys were small changes, big results, the first one, which is a tactical approach. The second is take charge, an empowering approach. And the third is an emotional appeal, save today, save tomorrow.

We then took these three concepts to focus groups with both res and commercial to refine it down to one concept. And we ended up with the emotional that actually appealed to both res and commercial, because there was no

polarization on either end.

The tactical was more save money, and that was most appealing to the businesses, but not so much as to the residential. And the take charge was actually very polarized, again; some people want to feel empowered, others don't.

And save today, save tomorrow was definitely hopeful; very appealing, the images; and I'll share some more of the research as I go through our campaign.

The way that we're going to measure the success of this integrated approach is with this perception tracker survey. They're fun surveys. And we'll look at how it affects the SMUD brand, as well as the program awareness, familiarity with the programs, all the way through participation.

We implemented the surveys mid-June because our campaign actually started July 1st in the bill, and has been rolling out through this week and to next week.

The campaign is broken into two segments this year, peak in July and August. So we'll measure in early September when the peak ends. Or not the peak, but when the campaign ends. And then energy efficiency will come in strong

September/October, and we'll measure again in December to see if there's any lift in the market, and participation and awareness.

So I'm going to show you actual examples of the creative. These are the print ads, the two main printouts for general market, residential and commercial.

And the first I showed you, where I showed you the nine concepts, there's actually -- there was a big, a baby, the face of a baby, which everybody loved. But for the wrong reasons. Not always applying it to the environment and what it represented. They had to read to get it.

But once we showed them -- we showed them many images in the focus groups. When we combined the image, either with the young girl or the businesswoman, with the earth, holding the earth, taking care of the earth, they immediately understood what it represented, and were then engaged. And that was our firs goal, is to get them -- to create and generate that interest and get them engaged.

What we learned in the focus group is they want to know -- again, they have the choices -- what's the benefit, the long-term

benefit, why are we doing this, who's doing it, what's SMUD doing, what are businesses doing. Then we'll, you know, -- we're willing to participate if everybody's doing it.

But, again, we also need to know how to do it. And that's where the green sidebar, we came up with through the focus group, the benefits to them or the community, savings and environment. Not necessarily in that order. We put community first because these are the two general peak.

And within the sidebar we tell them how and the benefits. And the call to action is actually how you save today, and then we drive them to the SMUD website, which is also a new page we created, a gateway page, like a micro-site.

These are two more examples of the diversity, so when we're in diverse publications. Billboards, we're using billboards for the first time in SMUD history. And those rolled out last week.

And, again, the campaign started July 1st in the bill, and has rolled out, pretty much everything, as of today, the last pieces, television, which starts next week.

These are examples of some web banners.

Again, they tell the customer basically the core educational message is to use less energy between 4:00 and 7:00. And the print ads, and in other different channels we tell them more specifically how to do that. This is just some more general.

This is bill insert. This is actually energy efficiency related bill insert, but it integrates messages of different programs and environment and community savings.

Shade tree. This is actually showing how programs now implement the same creative, because our goal is to have integrated campaigns so that all of our programs have the same look and feel, same sidebar, how to do it. So that we can leverage our marketing dollars, repetition, repetition, repetition, with a limited budget, through all the programs and services under this umbrella.

Commercial ad for a rebate. And then here's an example of what the SMUD gateway page looks like. smud.org.savetoday. So all of the advertising drives the customer to this gateway page. So whatever is actually being advertised that day, that week, is on the page. So you don't have to go hunt and look and search through

smud.org. It will then, when they click on the link, take them to the pages within smud.ord. So it's really easy for the customer to navigate through.

If they forget the savetoday portion of the address and just go to smud.org, there's actually the icon on the homepage to take them to this page, as well.

And then we just finished up the tv commercial today. I wish I could have shown it to you. I just have a rough cut. So this is actually the tv storyboard. So, I'll just walk you through it.

It's 30-second; it starts next Wednesday, the 16th. And it's the peak message. It's a doughnut commercial, so when we roll out the energy efficiency spot, the inside will change come September.

So, it's a little girl, because she's the core of our ad campaign. This is just a person, we actually have an actress. And she pulls out a computer touch screen. This is simple.

And with her hands, as she touches the computer screen, the sun and the solar panels come

in. SMUD wants to use more sun. She touches the screen and creates rain, water. Turns the wind turbine and wind to generate clean, reliable electricity. And less power from fossil fuels. It's actually our cogen plant, it's not -- and there's no garbage can. This is a rough storyboard.

And then she is actually clicking the appliances to turn them off. This summer we can all help by using less energy during the peak hours, 4:00 to 7:00 p.m. And turning our thermostats to 78 degrees. See, we'll save today, like money and energy.

And this is actually more of a diagram of our community. There's the capitol, businesses, and homes to represent our community. And save tomorrow, like the planet.

And she moves the planet aside and unveils the SMUD logo. It's simple. Save today, save tomorrow. And the smud.org.savetoday slides in as the last element.

That's it.

PRESIDING MEMBER PFANNENSTIEL: And it's great, thank you. If you're comfortable giving me this information, about how much is this

advertising campaign costing you?

MS. FURLONG: About -- well, I can say basically that it's the same advertising budget we already had for the year. But, we're just doing it differently. Rather than our programs going out with their individual advertising plans, -- actually the programs still have their own individual advertising plans, they just have adopted the look and feel of save today, save tomorrow.

So, any program that the advertising starting July 1st now has this creative look. And the advertising that we already had planned for the year that is dedicated to SMUD's goals of making sure our customers understand we have low rates, reliable service, that sort of thing, we call it our district campaign, that money that was already planned for this year was approved is what is being spent on the overarching umbrella message.

PRESIDING MEMBER PFANNENSTIEL: Then I'm really intrigued by this, because Edison and -- we didn't ask the question of PG&E or San Diego, their advertising is all through FlexYourPower. I mean, the FlexYourPower campaign, the statewide

advertising is the same kind of approach. Obviously a different theme, but getting to the same point.

And if the FlexYourPower's $20 million over three years, that's $7 million a year, that's, you know, $3 million a year for each of the -- I mean for the two larger companies, you know, that --

MS. FURLONG: We're not even a million.

PRESIDING MEMBER PFANNENSTIEL: Okay, I was just kind of wondering on a statewide basis what is being spent in this area. That was kind of what I was trying to go for.

Because it's clearly a really important kind of minimum campaign. I mean it's an enormous campaign, but it's the sort of information that we really need to get out there. So, really appreciate that.

MS. FURLONG: I'm doing the math in my head now -- and just the umbrella, which was existing budget, was 580.

PRESIDING MEMBER PFANNENSTIEL: Okay.

MS. FURLONG: So now the programs have their own individual budgets, and those were already planned, as well. So they all roll into

it. Combined, I don't know what that number is.

ASSOCIATE MEMBER ROSENFELD: Amy, what are SMUD's revenues? Because I want to do this in parts per thousand.

MS. FURLONG: 1.3 billion?

ASSOCIATE MEMBER ROSENFELD: 1.3 billion.

PRESIDING MEMBER PFANNENSTIEL: 1.3 billion.

MS. FURLONG: You're talking to the advertising person here.

(Laughter.)

ASSOCIATE MEMBER ROSENFELD: So, you should emphasize, this is one part per thousand of your revenues.

MS. FURLONG: Repeat that, please?

ASSOCIATE MEMBER ROSENFELD: You're talking about one part per thousand of your revenues, right?

PRESIDING MEMBER PFANNENSTIEL: Well, that's just --

ASSOCIATE MEMBER ROSENFELD: 1.3 million, 1.3 billion.

PRESIDING MEMBER PFANNENSTIEL: Anyway, excellent campaign. And we'll be looking forward

to hearing the updates on it in terms of the messaging and getting the responses back, we think will be real useful, to see what's working.

Any other questions?

Thank you very much. I think we'd keep you here longer except it's late in the day.

Gabe, I see Martha Brook is here. Do we want to try to move her presentation, which was scheduled for this morning?

MR. TAYLOR: I think that'd be a great idea.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Martha, for coming back. Yeah, whatever you can do I'd like to hear what you have to offer, and what you can leave behind for our further perusal.

MR. TAYLOR: Slightly out of order, but thank you very much for coming back, Martha.

MS. BROOK: Okay, yeah. I'm a stand-in presenter for staff of the Demand Response Research Center. And I will just take five minutes.

Mostly we just want to get it on the record that there's been some work done, and we think it's important when we're talking about

customer needs, you know, and education, to think about how we take what we've already done in identifying control strategies for demand response and moving it into education programs.

So the overview of the presentation. We're just going to talk about what we've done in identifying and communicating strategies for heating, ventilating, air conditioning, lighting and some lessons learned from that.

We'll just skip to this slide; I think it was a little out of order. The purpose of the strategies guide, and this is on the web and it is a physical document that looks like, I can't read -- it's about 60 pages long. And I'll talk about this at the end, the fact that it's 60 pages long and what that means, pros and cons, to, you know, moving it into something that's useful.

Anyway, the purpose of the guide was to help decisionmakers understand the types of demand response strategies, what might be appropriate for their particular building, and typical savings that they might accrue from implementing them.

And then to understand the transition between efficiency and demand response.

So, on the HVAC side, what Demand

Response Research Center has done, based on all the work they've done on automatic demand response in the last several years, is categorize HVAC types, and then transferring those later into -- and mapping those in with control strategies.

So, you know, constant volume systems, variable volume systems with chillers and both package units and central plants, and then whether it's a single zone, multizone, single duct, dual ducts, with or without reheat, the type of chiller, if appropriate. So that's how, sort of just general categorizations of HVAC type.

And then mapping the strategies, a category of strategies to those A, B, C, D building HVAC types on the end, and which ones are applicable to which building type. And, of course, there's much more detail in the report.

And then for both HVAC and lighting they present a decision tree, so that if you, you know, with or without DDC control at the zone, you know, can you do zone control, yes or no. Do you have control at the air distribution level, yes or no. Do you have control at the central plant level, yes or no. And this helps people decide what strategies they can implement.

And this is just a sort of a summary of all the work that's been done in the auto DR program, and where all of the strategies have maps to types of buildings. Which ones are most popular. And this sort of indicates that the global temperature reset that is actually going to be in the 2008 energy efficiency standards is the most globally applicable across building types. And, of course, that's why it's ready for Title 24.

This is just an example of how, if you implemented global temperature adjustment, what you can do and how you do it depends on what type of rate you're on. So, this is just illustrating that if you're on a critical peak pricing program, you would actually maybe do two temperature adjustments. And if you're on a demand bid program you'd typically only do one temperature adjustment.

So, again, this is an example of on the lighting side, a decision tree to help decisionmakers understand, depending on what the infrastructure is in the building, can you do continuous dimming, step dimming. lamp switching, fixture switching, zone switching, or is it not

even appropriate to consider automatic demand response for your particular building application.

So, the lessons learned that are included in this report are that, you know, shed strategies should be designed to minimize discomfort, inconvenience, loss of revenue obviously very important.

The closed loop controls are a lot easier to implement control strategies with. And have more positive impacts on building occupants.

HVAC, lighting and miscellaneous loads should all be considered for demand sheds. And then it's also important, and is discussed in this guide, the importance of understanding the issues of rebound, or demand response recovery strategies, so that you're successful throughout the day and not just during the peak events.

And then I just wanted to mention my own personal opinion about -- the value of this work is that experts still need to play a role in the participation with building owners to translate this for particular building applications.

So, that's the reason that automatic demand response has been successful to date, is that there's been some hand-holding going on. And

experts have come into the building and said, here's, you know, the possible strategies; here's what we think might work really well for your building. And there's a communication between people to make that decision.

And so the challenge that we have is to translate the good work that's been done, and that's included as documented in this report, to a broader, you know, either it's a trainer program to get the -- the trainers to get the experience that's embodied in this report.

And then, again, to have that expert connection with building owners and operators to understand and make decisions about particular building applications.

And then complete different subject, but one that we decided we should throw in here for discussion in the area of customer needs and load management. Is the whole area of benchmarking and energy performance labeling.

And we've been working and benchmarking for a number of years here at the Commission. And as several of you might know, we are working in really moving whole building benchmarking to a point where you can understand features of end

uses within a building to help you actually make a decision about an energy efficiency opportunity.

So, there is actually a prototype that you can -- for an action-oriented benchmarking tool, that you can find at the web link that's on this page. And we've also published a paper in energy engineering, and that is a collaboration between the staff at Lawrence Berkeley Lab and Commission Staff.

So, that's all I have.

PRESIDING MEMBER PFANNENSTIEL: That was good, that was fast.

ASSOCIATE MEMBER ROSENFELD: Wow.

PRESIDING MEMBER PFANNENSTIEL: I appreciate it. Now, I did hear a theme from what you just said, and I think I heard it several times today, how important hand-holding is.

That at sort of any level of customer, today we've been talking largely about commercial, small business and some larger business, it seems to be that that personal interaction between the customer and somebody who really understands the system, and whether it's programming a programmable thermostat or more complex.

Is that a general observation that's

correct, or --

MS. BROOK: Well, I think that's certainly how we've succeeded in the past. And if we want to do anything different, we need to be really clever about that advertising and education piece.

And, you know, maybe it doesn't have to be hand-holding, but it can't be a 60-page document, either. So hopefully there's something in between, and we can be clever enough to think about what those things are.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Martha. Other questions for Martha?

ASSOCIATE MEMBER ROSENFELD: Very impressive.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much.

We do have some time for public comment, if there's anybody here, anybody left who'd like to share comments with us that haven't already been picked up. Yes, please.

MS. CHUANG: Good afternoon. Angela Chuang from Electric Power Research Institute. My comments come within respect to a framework that was recently published after looking at decades of

research and demand side program implementation as domestically and internationally.

And the types of programs that were discussed today are very innovative, and they cover very well three categories that we've identified in our framework.

The categories well covered are alternative rates and pricing; that includes dynamic pricing, CPP, TOU and RTP. We've covered, seen today, good coverage and programs that we call direct incentive type programs, where you pay for adoption, you pay for performance.

As well as, especially in the last presentation, coverage in the area of outreach and cooperation. Where we see ads and we see promotions. We also see public appeals like FlexAlert.

But in the area of codes and standards within our framework that we've identified, I did not detect that coverage as much. And there's not as many examples of that. But there are examples. And codes -- programs that are in the area of codes and standards, they define an element that extends beyond just one demand response program that covers those in that program.

The operational procedures that govern how customers are treated, how the power system is operated are also covered under codes and standards.

And I'd encourage the Commission to look into these types of programs, as well. By doing so, we may find alternatives to how we operate today that can address customer -- in a system where we're willing to -- we operate in a way in which we're willing to pay anything for reliability. And that is an artifact from power system operations and NERC and WECC standards. It's just an artifact.

But in the market-based environment, where price is a consideration, is that true? Is every customer willing to pay anything for reliability? And if the answer is no, and we look at our rates in which retail rates are primarily, especially for residential customers, bundled to just have a particular energy price without differentiating the reliability value, maybe a reliability differentiate your component in our rates, which we see examples of in codes and standard type programs, for example, in the Italian utility system.

Then if the rates are bundled without that differential are we really addressing the real customer paying, and the differentiation that customers are -- I'm hearing from our presenters are asking for. Not all customers want to be treated the same. Maybe they want a menu of choices.

And with coupling with AMI and technology, perhaps we do not need to operate like we have in the past, where we were limited by technology. Perhaps a differentiation, the choice can be enabled better through technologies and consideration of operational procedures. This extends into smart grids and how the system is operated.

So those are my comments, thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much.

Other comments? Final comments from the dais? And, Gabe, anything further?

I think, again, we would ask written comments, have you put a date for written comments?

MR. TAYLOR: The date's in the notice. I'd have to check. I believe it's 5:00 on

Thursday, July 17th.

PRESIDING MEMBER PFANNENSTIEL: Okay. One week.

Really a very good session today. I appreciate everybody's participation, information. And we will figure out what to do with it.

Thanks very much.

(Whereupon, at 4:06 p.m., the Committee workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 25th day of July, 2008.